THE MANKIND QUARTERLY

VOL XXXII, No. 3 Spring 1992

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

abstracts in anthropolgy

ARCHAEOLOGY / CULTURAL & PHYSICAL ANTHROPOLOGY / LINGUISTICS

Edited by Dr. Roger Moeller and Dr. Jay Custer

An indispensible reference and research tool for the international community of anthropologists. Several thousand abstracts, classified and indexed by author and subject, thoroughly cover anthropological scholarship in all its subfields:

Archaeology: Theoretical, Methodological and General; North America-Arctic, Southwest, Plains and Texas, Northeast, Midwest, Middle Atlantic, Southeast, Central Canada, Northwest; Mesoamerica, Central America; South America, Caribbean; Africa; Asia; Europe; Near East, Egypt; Oceania.

Physical Anthropology: General; Fossil Record and Evolution; Living Humans-Population (Birth control, fertility, population), Genetics, Calcified Tissues, Growth and Development, Body Composition & Adaptation; Living Non-Human Primates-Behavior and Field Studies, Morphology, Physiology and Pathology.

Linguistics: Historical; Psycholinguistics; Sociolinguistics; Theoretical Linguistics.

Cultural Anthropology: Applied Anthropology, Social Policy; Arts-Dance, folklore, graphic arts, music; Cultural Ecology; Economics-Theory, technology, political, economy, colonialism, development; Ethnohistory; Kinship-Family organization, marriage; Medical Anthropology; Minorities-Ethnicity, class differentials, sex roles; Political Structure and Process, Law-Psychological anthropology; Social Organization-General; Sociocultural Change-Culture contact, migration, modernization; Symbol Systems-Religion, ritual, world view; Theoretical, Methodological and General; Urban Studies.

Subscription Information:
Sold as a 2 volume group - 8 issues yearly ISSN: 0001-3455
Institutional Rate: $239.00 + $9.00 postage & handling US & Canada, $18.70 elsewhere. —***Complimentary sample issue available.***

Baywood Publishing Company, Inc.
26 Austin Avenue, Amityville, NY 11701
Call (516) 691-1270 • FAX (516) 691-1770
☎ **Orders only - call toll-free (800) 638-7819**

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Vol. XXXII, No. 3 Spring 1992

THE MANKIND QUARTERLY

EDITORIAL COMMITTEE

BRUNETTO CHIARELLI (Florence, Italy)
HANS W. JÜRGENS (Kiel, Germany)
RICHARD LYNN (Coleraine, Northern Ireland)
EDGAR C. POLOMÉ (Austin, Texas)

EDITORIAL ADVISORY BOARD

Peter Boev, Sofia, Bulgaria; Raymond B. Cattell, Honolulu, Hawaii; Tadeusz Dzierżykray-Rogalski, Warsaw, Poland; J. Balslev Jorgensen, Copenhagen, Denmark; David de Laubenfels, Syracuse, New York; Jacques Macquet, Los Angeles, California; T.L. Markey, Ann Arbor, Michigan; Umberto Melotti, Pavia, Italy; Clyde E. Noble, Athens, Georgia; Jens Palsson, Reykjavik, Iceland; R.J. Rummel, Manoa, Hawaii; D.N. Saksena, Lucknow, India; Noel W. Smith, State University of New York at Plattsburg; Frederick J. Streng, Dallas, Texas; Charles C. Susanne, Brussels, Belgium; Daniel R. Vining, Philadelphia, Pennsylvania; Volkmar Weiss, Leipzig, Germany

FOUNDER AND FORMER EDITOR-IN-CHIEF
Robert Gayre (Edinburgh, Scotland)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

VOL. XXXII, No. 3 Spring 1992

CONTENTS

The Indus Tradition and the Indo-Aryans
By Subhash C. Kak 195

The Six Swans and Artemis
By Daniel E. Gershenson 215

New Thoughts on an Archaic Artifact
By Lotte Motz 231

***Cláen Temair*: Sloping Tara**
By William Sayers 241

The Distant Past and Its Relation to Current Psychology: A Tour of Psychophysical Dualism and Non-Dualism
By Noel W. Smith 261

Cranial Capacity and IQ
By R. T. Osborne 275

Virtue in "Racism"?
By Raymond B. Cattell 281

Group Differences Revealed in Morphogenetic Parameters
By F. J. Irsigler 285

How Relevant is the Nature/Nurture Controversy to the Need for Eugenics?
By William J. Andrews 311

Cover Picture: A small statuette of bronze discovered in Eyrarland, Iceland possibly representing the god Þórr. (See: *New Thoughts on an Archaic Artifact*)

The Mankind Quarterly is published by The Institute for the Study of Man, 6861 Elm St., Suite 4H, McLean, Virginia 22101, U.S.A. [Tel: (703) 442-8010 – Fax: (703) 847-9524]. The price of subscriptions is $20.00 per annum for students, $32.50 for private individuals, and $70 per annum for libraries, institutions and other corporate bodies. Special reduced three-year subscription rates are available at a cost of $90 to individuals (twelve issues) and $200 for libraries and other corporate bodies (twelve issues).

Copyright 1992 by The Institute for the Study of Man ISSN 0025-2344

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Indus Tradition and the Indo-Aryans

Subhash C. Kak
Louisiana State University, Baton Rouge

The earliest Indian literature has astronomical allusions to events of the 3rd millennium B.C. and earlier (Tilak 1893, Sengupta 1947, Kak 1987b). The setting for the hymns of the Rigveda is the area of Sapta Saindhava, the region of Punjab bounded by the Indus and the Ganga rivers. There are also geographical references in the Rigveda that are of chronological value. In the past 5000 years north India has undergone major tectonic and hydrological upheavals, and so it becomes possible to correlate certain geographical references to different time epochs. Other significant references are to sea-going vessels and to settlements on the Sarasvati (Ghaggar-Hakra river, which is now dry) that also provide significant clues. The archaeological record suggests that this river turned dry around 1900 B.C.

The genealogies of the Purāṇas and the later Vedic literature also reach back at least into the third millennium B.C. (Pargiter 1922, Roy 1983). This later literature, starting with the Śatapatha Brāhmaṇa, describes an expansion of the civilization outside of the original area of the Indus and the Sarasvati valleys. There are also references to geophysical changes in the later Vedic literature.

Archaeological investigations have also shown that the Indus cultural tradition represents the beginnings of the Indian civilization. This tradition has been traced back to about 6500 B.C. in remains that have been uncovered in Mehrgarh and other sites (Jarrige and Meadow 1980, Possehl 1982, Kenoyer 1991, Shaffer 1991). It reached its flowering during the period 2600-1900 B.C., called the Harappan age, when several cities and towns were established and writing, based on the so-called Indus script, was used. In the 1970's it was found by M.R. Mughal (1982) that most of these towns and settlements were on the banks of the Sarasvati river. One of the most striking insights of the continuing studies is that "there were several ethnic groups in the Indus Valley throughout the third and second millennium B.C., of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

which the Harappan was only one. Rather than an area dominated by Harappan culture, the Indus Valley saw the development of a complex cultural mosaic of related but distinct ethnic groups" (Shaffer and Lichtenstein 1989). Hydrological changes and the socio-economic evolution of the groups led to an abandonment of large areas of the Indus valley. The tradition continued in a state of decline to 1000 B.C. and perhaps later. A second urbanization began in the Ganga-Yamuna valley around 900 B.C. The earliest surviving records of this culture are in Brahmi script. This second urbanization is generally seen at the end of the Painted Gray Ware (PGW) phase (1200-800 B.C.) and with the use of the Northern Black Polished Ware (NBP) pottery. Late Harappan was partially contemporary with the PGW phase. In other words, a continuous series of cultural developments link the two early urbanizations of India.

The restructuring of society that occurred between the two urbanizations is partially mirrored in the restructuring of the Indus script. The Brahmi script, which was in use throughout India during the reign of Aśoka [reigned 269-232 B.C.], was highly systematic, reflecting clearly the theories of Indian grammarians. Literary evidence as well as signs on early punch-marked coins suggests that writing in India during the second urbanization goes back much before the middle of the first millennium B.C. The punch-marked coins that go far back to at least the seventh century B.C. (Mitchiner 1973) use a Harappan weight standard. It appears that the coins were originally issued as silver blanks by traders and the weights checked by traders. The checking was represented by marks that are strikingly similar to the Harappan signs. By the sixth century B.C. the kings began putting their own issuing marks on the coins. These pictorial marks were generally representative of the meaning of the king's name. The Indus script uses many more signs than Brahmi and it is generally written from right to left, in a direction opposite to that of Brahmi. On the other hand, there are instances of both the scripts being written in the *boustrophedon* style, that is, written in opposite directions in alternate lines. But the change in the normal direction of writing does indicate a fundamental shift. Whether this shift took place between the two urbanizations or just prior to the Mauryan empire is not clear.

The spread of the Indian civilization, as indicated by the literary and the archaeological records, can further be checked by an analysis

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of the processes that might have supported this spread. Ammerman and Cavalli-Sforza (1984) argue for the parallel situation in Europe that the spread there of farming after 7000 B.C. could be seen as a diffusionary process brought about by a combination of cultural diffusion, and population growth and displacement, which they call *demic* diffusion. Sokal, Oden, and Wilson (1991) have published genetic evidence supporting this model. Genetic variation across the Indian sub-continent suggests that a diffusion model might be at the basis of the spread of the Indian people as well.

We also call attention to the dating of 4th millennium B.C. for a copper-based head found in Delhi (Hicks and Anderson 1990). It has been argued by Hicks and Anderson that the head represents Vasishtha, who is one of the authors of the Rigvedic hymns, or his king Sudas. This dating supports the traditional chronology of the Vedic literature.

The evolution and restructuring of the ethnic groups (Shaffer 1991) can be seen in the archaeological record. No evidence for any break in the Indian tradition due to any invasions has been found. Jim Shaffer (1984) who sums up the archaeological evidence summarizes:

> Current archaeological data do not support the existence of an Indo-Aryan or European invasion into South Asia at any time in the pre- or proto-historic periods. Instead, it is possible to document archaeologically a series of cultural changes reflecting indigenous cultural development from pre-historic to historic periods. The early Vedic literature describes not a human invasion into the area, but a fundamental restructuring of indigenous society that saw the rise of hereditary social elites... The Indo-Aryan invasion(s) as an academic concept of the 18th and 19th century Europe reflected the cultural milieu of that period. Linguistic data were used to validate the concept that in turn was used to interpret archaeological and anthropological data. [page 88]

Since the Indo-Aryans were the dominant group in northern India by the late 2nd millennium B.C., one is compelled to the conclusion that they must have been one of the ethnic groups in the Indus and the Sarasvati valley areas as early as 6500 B.C.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

In this essay we show that there is enough convergence in the archaeological evidence about the Indus tradition and the literary and the geographical evidence of the Vedic literature to conclude that the Indus tradition was essentially Indo-Aryan. Nevertheless, since the Indus tradition was characterized by several ethnic groups (Shaffer 1991, Kenoyer 1991), it is very likely that several languages, some of them non-Indo-Aryan, were also present in the area. Our conclusion that the Indo-Aryans represented the Harappan ethnic group is based on our analysis of the Indus script which seems to have been used for an Indo-Aryan language (Kak 1987a, 1988, 1989, 1990) and on the geographical evidence from the Vedic literature. A considerable part of our paper is, therefore, devoted to a review of our analysis of the Indus script. Astronomical evidence already summarized elsewhere (Kak 1987b, 1991) will not be reviewed. But it should be noted that such evidence also supports the conclusions of this paper.

The Indus Tradition

We begin with a brief review of the Indus tradition. In its earliest phase this tradition was characterized by cultivation and animal husbandry. Cattle pastoralism was an extremely important component of the economy. It is estimated that as early as 5500 B.C. domesticated cattle were already central to food production. In this respect the Indus tradition is different from the tradition of Mesopotamia which emphasized domesticated sheep and goats. Jim Shaffer (Shaffer and Lichtenstein 1989, Shaffer 1991) views the evolution of the culture in the Indus region in four broad eras. The first is the *early food producing era* (c. 6500-5000 B.C.) that is characterized by an absence of ceramics. The next is the *regionalization era* (5000-2600 B.C.) where distinct artifact styles (including ceramics) develop regionally. The third is the *integration era* (2600-1900 B.C.) where we see pronounced cultural homogeneity and the development of urban centers. The fourth era is that of *localization* (1900-1300 B.C.) where characteristic patterns from the integration era are seen to be blended with regional ceramic styles. This era indicates decentralization and restructuring of the interaction networks.

Buildings were made out of mud bricks and fired bricks and stone. There was public architecture as in plazas, streets, public buildings, wells, drains, and tanks. Pottery was mass produced by using wheels

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and sometimes by molds. Painted decorations used a variety of geometric, animal, and floral motifs which are still popular in India. A network of long distance trade existed. Turquoise from central Asia, lapis lazuli from northern Afghanistan, and shells from the coast of the Arabian sea have been found at Mehrgarh.

The Indus tradition consists of several overlapping cultures and styles, that probably represent different ethnic groups. Figure 1 presents a chart that shows the relationships between some of these groups. The richest period of this tradition is named Harappan after the site where the first excavations were made. While the ruins of Harappa had been known for a long time, their importance was appreciated only after Daya Ram Sahni in 1921 conjectured that they may belong to the pre-Mauryan era. A year later R.D. Banerji opened a trench in Mohenjo-daro 400 miles away and he suggested that the two ruins were related. But it was an article by John Marshall in 1924 in the *Illustrated London News* on the Indus Valley discoveries which spread the story far and wide. Experts working on Mesopotamian antiquities pointed out connections with finds from that area which went back to the 3rd or 4th millennium B.C. The ethnic and the regional differences amongst the Harappans themselves are being revealed by the more recent work. Thus Possehl and Raval (1989) have found two different styles amongst the Harappans in Gujarat.

Harappa was in a poor state when archaeologists started examining it because engineers had mined the ancient bricks from the site decades earlier to lay the roadbed of about 100 miles of the Lahore-Multan railway line. How much of priceless evidence was lost there one will never know. Since then hundreds of other sites have been discovered. These include major sites at Ganweriwala, Rakhigarhi, Kalibangan and Lothal. The Harappan world covered an area of 650,000 to 800,000 square kilometers that stretches from the Himalayas in the north to the Tapti river in the south, and from the Indus river valleys in the west to the plains of the Ganga and Yamuna rivers in the east (Kenoyer 1991). Most of the sites have been found on the greater Indus plain, which was formerly watered by two major river systems, that of the Indus and Sarasvati. A recent count has identified close to a thousand settlements. Figure 2 gives a map of the geographical features of northwest India and adjacent regions in 3rd millennium B.C. Note that in this reconstruction the Sarasvati flows indepen-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

dently into the sea.

While the Harappan city seemed to evolve out of an irregular net plan, it had two distinctive elements. In many cases to the west lay a "citadel' on a high platform that based the public and ceremonial buildings. To the east was the lower city with straight, wide main streets that divided the city into large blocks. The blocks in turn were served by narrow curving lanes. The houses were built of generally standardized burnt bricks. They were planned as several rooms around a square courtyard, and were often of two or more stories. Some houses had bathrooms which were connected by bricklined drains to sewers under the main streets. Many windows were screened with grilles of terra cotta or alabaster. Houses presented blank walls to the streets and, in many cases, the doors opened on the side lanes. All this presents a picture reminiscent to the architecture found in a traditional city in contemporary Punjab.

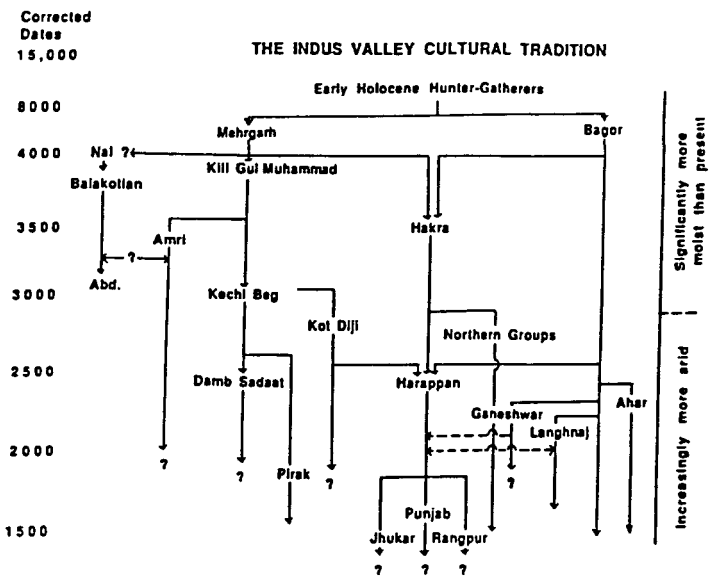

FIGURE 1: Ethnic group relationships within the Indus tradition as sketched by Shaffer and Lichtenstein (1989).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

One of the striking buildings in the citadel at Mohenjo-Daro is the great bath. The oblong bath is 39 feet long, 23 feet wide, and 8 feet deep. It was sunk into the paving of a courtyard and it was approached from the north and south by brick steps with possible wooden stair-treads. The floor of the bath sloped to an outlet that led in turn to an arched drain deep enough for a man to stand upright. Just north of the pool were eight small bathrooms drained by little runnels in the floor. Each bathroom had its own staircase leading to the second storey which may have housed cells for the priests, if the whole complex was like a tank of a Hindu temple.

The largest building uncovered at Mohenjo-Daro was probably a palace of size 230 feet long and 78 feet wide. At Harappa a building twice this size, that may have served as a granary, has been discovered. The iconography includes figures of a Mother Goddess and that of bearded nude men in a posture the Jains call *kāyotsarga*, where the teacher's posture is upright with legs slightly apart and the arms are parallel to the side of the body but do not touch it. But the most striking Harappan deity is a horned god in a yogic posture, who is strongly reminiscent of *Shiva* in his *Pashupati* form. Amongst the ornaments of the Harappans beads of different materials and sizes have attracted scholarly attention.

There is a distinct difference in the brickmaking of the two urbanizations. The Harappans are known to have used several brick sizes: 30 x 15 x 7.5 centimeters and 40 x 20 x 10 centimeters being the most common, where in these cases and others the length, breadth, thickness ratio is about 4:2:1. The bricks used during the second urbanization of the Ganga valley are not according to these ratios, one type encountered there has the ratios 7:4:1. But this departure may merely be a result of the popularization of one of the existing styles in a multi-ethnic and multi-cultural society. We do not observe a complete break with the earlier tradition, but only reorganization and re-adjustment. Thus corbelled drains, characteristic of the Harappans, persist in Ganga valley.

The Harappan settlements along the Sarasvati were located on the desert scarp above the entrenched river. On the other hand, the settlements during the age of Painted Grey Ware (1200-800 B.C.) are found within the entrenchment on the bed of the river (Possehl and Raval 1989). This establishes two important chronological markers.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

First, the river had dried up before the PGW era. Second, the Rigvedic age which describes the Sarasvati river as one of the largest of its times lies prior to the drying up of Sarasvati. There are reasons to assume that the abandonment of the Harappan sites in the Sarasvati valley region was caused by this drying up. This suggests the epoch of 1900 B.C. for this change.

Indus Writing

The surviving records of the writing of the Harappans are mainly carvings on seals, small pieces of soft stone, and copper tablets. The total number of inscribed objects is around 4200, but many of these are duplicates (Mahadevan 1977, Joshi and Parpola 1987). The number of different signs used is close to 400, but these include the various numeral signs as well as the conjuncts of the more basic signs. Most texts are very brief, the average length being 5 signs, and the longest text, on a three-sided 'amulet', is 26 signs long. The longest inscription on a single side is 17 signs, in three lines, on a seal. The primary purpose of the seals was perhaps to mark ownership and the copper tablets may have served as amulets. A large number of seal impressions on clay have also survived. These are likely to have served as tags which were attached to bales of goods, for the reverse sides often show traces of packing materials. The impressions of the seals are likely to have served as signatures. The pictorial motifs that accompany the writing include the humped bull, buffalo, elephant, tiger, rhino, crocodile, antelope, fish, tortoise, and so on. Geometric designs include the *swastika*, spoked wheel, and a circle with a dot. These pictures are similar to the ones that show up in the seals of two thousand years later.

The Harappans did maritime trading, and their seals have been recovered in Mesopotamia from the 24th century B.C. onwards. On the other hand Persian Gulf seals have been found in the Harappan port of Lothal. Inlands the Harappans moved their goods using wheeled carts, camels, and boats. They used strikingly accurate weights in a series that is preserved in later Indian weights. The same unique series is also found on the island of Bahrain in the Persian Gulf suggesting this might have been their colony. Some of the weights are so tiny that they could have been used by jewelers to measure gold, others are so big that they must have been hoisted by ropes.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

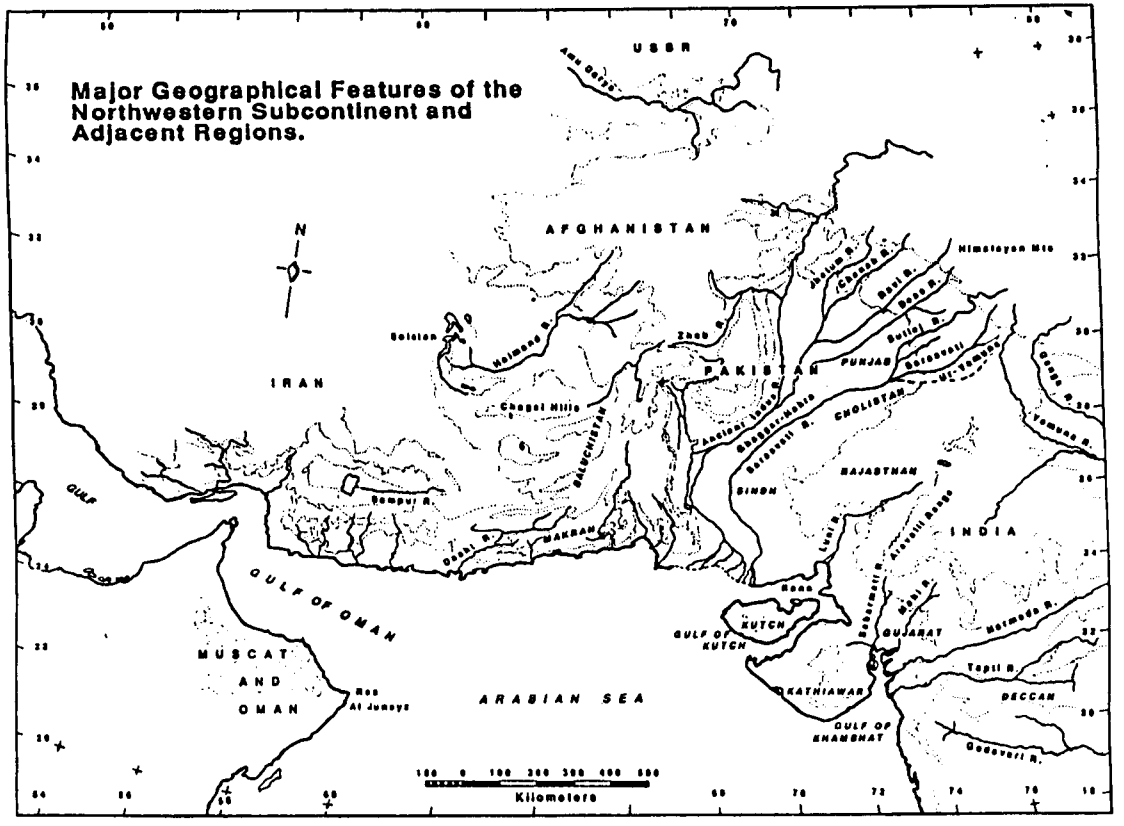

FIGURE 2: Geographical map of northwest India and adjacent regions for the 3rd millennium B.C. as in Kenoyer (1991).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Their products would have included fine pottery wares, jewelry, copper and bronze vessels, and woven cotton goods. The variety and extent of this trade indicates that credit-keeping and calculations were very important to the Harappans.

The seals of the historical period, from the time of Aśoka and later, also carry brief texts. In almost all cases the legends end in the genitive case, representing ownership. The exceptions are where no case-ending is used, or where the ending is nominative as in religious formulae. The impressions from these seals, like the earlier seals of the Harappan period, were used to authenticate records, or to serve as signatures.

Indian scripts have undergone continual change for centuries and by the medieval times the earliest scripts had been quite forgotten. James Prinsep deciphered Brahmi in 1837 and this allowed the edicts of the emperor Aśoka to be read. In the late 19th century G. Buhler argued that many Brahmi letters were derived from a North Semitic script. G. Ojha soon demonstrated flaws in these derivations.

In Brahmi, as in later Indian scripts, each letter represents a consonant combined with *a*. Combinations with other vowels are represented by the use of distinctive marks which modify the basic sign. Two consonants together were expressed by placing the signs for the two, one on top of another. This process of combinations makes the total number of distinctive Brahmi signs to be 330 for the 33 consonants alone, without considering the conjuncts. It is not surprising, therefore, that Indus has about 400 signs, and many of these signs are modified in exactly the same regular manner as in Brahmi.

C.S. Upasak in 1957 divided Brahmi into two groups: the basic signs, and the secondary or the derived signs. This division was based on morphological considerations. It is significant that it is these basic Brahmi signs that look closest to the Indus signs. Many of the Brahmi signs are the first syllables of familiar objects: thus *g, ch, m, ś, h* appear to have been derived from the representations of *giri* (hill), *chatra* (umbrella), *matsya* (fish), *śara* (arrow), and *hasta* (hand).

It is tempting to assume that a systematically designed script such as Brahmi would represent a simplification of an earlier script. And with the parallel of ancient Egyptian writing in mind, one may further assume that the ancestor of Brahmi may have included logograms as well as determinatives in addition to the phonetic signs. These determinatives in Egyptian indicated grammatical categories; thus an

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

egg-shape following a name indicated a feminine name, and a name in a 'cartouche' represented royalty. Assuming Indus to be this ancestor, one would expect a core syllabary together with many logograms and other signs. The decipherment would best proceed by concentrating on this syllabary first.

How difficult might this decipherment be? Historically, the easiest writings to decipher were the ones with the least signs, like the Phoenician and Ugaritic writings, that consist of only 22 to 30 signs or Brahmi, where the shapes were preserved greatly in the successor Nagari script. The syallabaries of Old Persian, Cypriot, and Linear B were more difficult because the number of signs was greater. The decipherment of logo-syallabic writings, such as Egyptian hieroglyphic, Akkadian cuneiform, Hittite hieroglyphic, and Indus have posed the greatest problems since each writing here involves hundreds of signs.

G.R. Hunter in 1934 and J.E. Mitchiner in 1978 published significant studies relating Indus and Brahmi. However these studies did not provide conclusive arguments establishing the relationship. By the mid-1980's no one had yet tried to scientifically relate the Indus signs to the later Brahmi letters. This was despite the fact that many inscriptions in Brahmi looked almost identical to Indus inscriptions. The absence of a scientific study of the two scripts was due to the influential view, fostered by many scholars in the 19th century, that Aryans could not have been present in India before the arrival of the Indo-Europeans in Greece. Furthermore, it was taken as axiomatic that the Indus script could not have been used for an Indo-European language. But no archaeological evidence of the assumed invasion of India by the Aryans has been found.

My analysis of Indus and Brahmi based on computer created concordances revealed obvious connections between the two scripts that could not be explained as arising out of chance (Kak 1987a, 1988, 1989, 1990). Such an analysis is possible since letters in a script occur with different probabilities. These probabilities may also be characteristic of the language used. Thus for English *e* occurs about 12 percent of the time followed by *t* at 10 percent, *a* and *o* at 8 percent, and so on; at the other end of the spectrum *q* and *x* are at about 0.2 percent, and *z* is at about 0.1 percent. In fact such differences in frequencies make it possible to break substitution ciphers. My analysis showed that the most frequent letters of Indus and Brahmi looked almost identical and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

besides they were in the same order of frequency. A probabilistic analysis confirmed the connection between the two scripts (Kak 1988). One does encounter changes in the orientations of the signs. For example the fish sign has been flipped over. But such modification can also be seen in the evolution of Brahmi to the later Nagari, where many signs have been turned sideways or upside-down.

Briefly the connections between Indus and Brahmi scripts are as follows. Both scripts use conjuncts where signs are combined to represent compound vowels. The core set of most frequent Indus signs seems to have survived without much change in shape into Brahmi where it corresponds to the most frequent sounds of Sanskrit. The writing of numerals in Indus, especially the signs for 5 and 10, appears to have carried over to Brahmi.

Next I turned to the structure of the inscriptions. These are generally only about less than 10 letters long and there is other evidence that suggests they are often proper names indicating possession. Such indications are made by grammatical case-endings. Thus in English adding an s to a name shows ownership. For example *David's* means ownership by David. The genitive case-ending in Sanskrit is often *sya* or *sa* and in Prakrit the ending is generally *sa* or *ssa* [like *s* in English] and this is what we frequently see in these inscriptions. This suggests that the Indus language is likely to have been Prakritic. Note that the sign value for the case-ending was obtained independently through frequency considerations. Such independent cross checking is absolutely essential in decipherments.

Now I turned to specific inscriptions for further checks (Kak 1988). Here the attested contacts between Sumer and Harappa turn out to be invaluable. Sumerian documents mention the regions of Magan, Meluhha, and Dilmun as lying to the east of their land. Dilmun is identified by most scholars to be the island of Bahrain in the Persian Gulf, Magan is taken to be the coast of Makran in Baluchistan, and Meluhha is considered to refer to the region of the Indus valley. The Sumeriologist S.N. Kramer in 1952 in a translation of a Sumerian epical story 'Enmerkar and the Lord of Aratta' found that a fourth region to the east is described as being *Bad Imin*, which if freely translated represents 'the land of seven cities' or 'the land of seven high places'. (This is from *bad* meaning 'city', *ia* meaning 'five', and *min* meaning 'two'.) Now the Vedic Indians called their land *Sapta*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Saindhava, which Harold Bailey suggested originally meant 'the land of seven high places'. J.V. Kinnier Wilson (1974) identified a commonly occurring combination of Indus characters as representing *Bad Imin* or Sapta Saindhava on the basis of parallels with Sumerian writing. I found that these very signs are read just the same using my Indus-Brahmi theory (Kak 1987a). This provides evidence of commonality between the Harappan and the Vedic worlds. Unfortunately, the phonetic values for the most frequent Indus signs do not help us in reading most of the seals and other texts. The reason for this is that the short lengths of these texts disallows unambiguous readings. Further, progress in the decipherment of the logograms has been slow.

To return to the question of the evolution of writing it needs to be added that the pottery marks in late second millennium B.C. are reminiscent of the Indus signs. It is reasonable to assume that this was the period when the logosyllabic Indus was being reorganized into a proto-Brahmi script.

Although the demonstration that Brahmi is derived from Indus does not, by itself, establish that the Harappan people were Indo-Aryan, the structural similarities in the Indus and the Brahmi texts do point to that conclusion. But there remains the possibility that the Harappan civilization was not predominantly Indo-Aryan, because a small elite could have imposed its language and script on the people. But it reinforces the other continuities between the two urbanizations that the archaeological discoveries of the past few decades have revealed. Furthermore, it agrees with the independent proposals by Gimbutas (1973, 1985), T.V. Gamkrelidze and V.V. Ivanov (1985) [see also D'iakonov 1985], and Colin Renfrew (1987) all of which, though with radically differing interpretations, posit a dispersal of the Indo-European languages much earlier than previously thought. We will not go into the relative merits of these proposals here.

The relationship between Indus and Brahmi is one more piece of evidence that interlocks with other similar evidence from archaeology and literature linking the Harappan and Ganga civilizations. It opens up a new direction for a further study of the Indus script. It could also stimulate interest in the need for further studies between the rise of writing in Mesopotamia and the Harappan world.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Geographical Evidence from the Rigveda

The geography of Rigvedic India presents several clues that are significant for chronology. The main home of the Vedic Indians was the region between the Sarasvati and the Drishadvati rivers. But this was just the heartland of the wider region of Sapta Saindhava that extended from the Indus to the Ganga. This area is described as a region that is bounded by four seas (lakes). Bhargava (1964) theorizes that these lakes were in the courses of Indus, Ganga, Sarasvati to the three sides of Punjab and the lake in the valley of Kashmir. There is also several descriptions of the rivers of this region draining into a sea and of ships, some of which were equipped with sails. In the *Vājasaneyi Saṃhitā* it is mentioned that five rivers feed into the Sarasvati. This suggests that trade via rivers and the sea must have been important then. Sarasvati is praised the most out of all the rivers which indicates that many of the Rigvedic hymns must have been composed at its banks. By the Brāhmaṇa period, this river had disappeared. Also after the period of the Saṃhitās, the river Indus is rarely mentioned, suggesting that the focus of the civilization had shifted a good distance (Macdonell and Keith 1907). In the Rigveda itself Ganga is mentioned only once (10.75.5) in contrast to the frequent references to Sarasvati.

Although one may not agree with all of Bhargava's interpretations, he does stress several important issues that have often been glossed over. Bhargava sees reference to major tectonic changes in the literature that follows Rigveda. This leads to extensive flooding, draining of many lakes, and change in the courses of rivers. It is interesting that Robert Raikes and George Dales also hypothesize that flooding may have contributed to the decline of Mohenjo-Daro (Raikes and Dales 1986). They suggest that the waters of the Indus river were impounded by a natural dam some miles downstream from Mohenjo-Daro leading to its abandonment. This scenario may have been a part of a larger process of tectonic changes that caused Sarasvati to dry up.

We have already mentioned some reasons in favour of the view that the Sarasvati may have dried up around 1900 B.C. This would then represent a *terminus ad quem* for the Rigvedic age.

There are references to Sarasvati reaching the sea at Prabhas in Gujarat in the Mahābhārata (see Bhargava 1964) and the Purāṇas (for example Brahmapurāṇa 77.2). This suggests that the original core of the epic and the Purāṇas must also date back into the Rigvedic era.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Further Parallels and Convergence

At this point it is not possible to clearly know why Indus writing disappeared for centuries. The answer to this puzzle is bound to be a complex one, and related to the decline of the Harappan cities. The decline of Mohenjo-Daro was possibly associated with rising water levels due to the forcing upwards of a large section of the Arabian Sea coastline by a tectonic shift or by the natural damming of the Indus river. Furthermore, sedimentation and tectonic movement led to the capture of the Sarasvati system by the Sutlej river of the Indus system and the Yamuna river of the Ganga system. This led to the drying up of the Sarasvati and the Drishadvati rivers, in whose valleys most of the Harappan settlements were situated. This disruption to the economy of the heartland also caused cities like Harappa to decline. Now a fundamental shift was taking place in the economic life of the Harappans. Theirs had been a dual economy based on agriculture and pastoralism. The emerging society was more intensely focused on agriculture. There was therefore an emigration away from the earlier towns to new communities in less arid regions. The new economy did not at first generate surplus wealth to lead to urban centres of the same size as in the earlier age. Eventually new powerful cities were established due east at Kaushambi, Atranjikhera, and Mathura.

The evidence from the Vedic literature also speaks of a gradual relocation from the area of Sapta Saindhava which is practically identical to the Harappan domain. During the Rigvedic period Sarasvati is the most important river. This fact itself forces one to date the hymns to the latest of the beginning of 2rd millennium B.C. The earliest Vedas describe a society that is partly urban and partly agricultural and pastoral like the Harappan society. This may be seen most easily from the many occupations listed in Yajurveda. The Rigveda describes fortified towns. Rigvedic ritual requires construction af altars out of bricks. On the other hand, some scholars interpret certain structures in the lowest layers of the Harappan ruins as fire altars. The Brāhmaṇas, which are appendices to the Vedas, describe the phase of slow expansion to the east, a region that was originally densely forested. They, in turn, are followed by Āraṇyakas and Upaniṣads that capture the cultural transformation, also parallelled in the Harappan evidence, that values living in forests and small farming communities.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

That the Vedic people were literate is indicated partially by a reference to the mark of eight that occurs in the Rigveda itself (10.62.7). Chāndogya Upaniṣad has several references to syllable counts (e.g. II.10) and to analysis of words in terms of vowels and consonants. Aitareya Āraṇyaka, of the period of forest dwelling, also describes the distinction between vowels and consonants (II.3.1) and has reference to writing (V.3.3). Several Upaniṣads describe different aspects of the alphabet.

Some scholars have argued that the Indus tradition could not be Indo-Aryan because no representation of any horse has been found in remains prior to 2000 B.C. in India. However, horses remain rare in Indian iconography even in the later historical period when they had undoubtedly reached India. Also there is evidence of a presence of horses in Iran that goes back to 3000 B.C. And since the Harappans had trade links with Sumer, Iran and other regions they surely knew the animal. Some scholars have argued that the horse must have been relatively rare in Rigvedic culture and this appears true of later periods of Indian history as well. Rigveda mentions horses for drawing chariots but there is no mention of riding in battle. Nevertheless, in view of its importance in the Rigvedic hymns as the symbol of speed and of the sun, the fact that no representations of the horse have been found in Harappan iconography remains a puzzle.

Conclusions

The archaeological evidence about the Sarasvati river provides us a chronological framework. Literary references in the early Vedic literature compel the conclusion that before this river dried up its settlements were of the Vedic people. But the settlements before its drying up are those of the Harappans. Furthermore, as pointed out by Mughal (1982), the Sarasvati valley area was the bread-basket of the Harappans. This indicates that the large urban centers of Harappa and Mohenjo-Daro may have served as gateway cities at the borders (Ratnagar 1982). All this leads to the common identity of the Harappans and the Indo-Aryans, a conclusion that the independent study of the Indus script has corroborated. Since the Harappan phase is merely one manifestation of the Indus tradition that shows great continuity and goes back to at least 6500 B.C., we conclude that this tradition was partly Indo-Aryan. These conclusions agree broadly with the tradition-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

al chronology of India and allow us to see why the findings of Hicks and Anderson (1990) should not come as a total surprise. While our reconstruction only emphasizes that the Indo-Aryans may have reached the Indus area sometime before c. 2600 B.C., we would like to suggest that the nature of the continuity of the Indus tradition indicates that they were present as one of the ethnic groups right from the earliest times.

We also repeat that the Harappan people, in themselves, comprised of several ethnic sub-groups. It is conceivable, therefore, that the Vedic settlements in the Sarasvati valleys were different in the details of their culture and their belief system from the urban Harappans in the cities. The Vedic literature does talk of struggles between various groups and such a conflict may have occurred between the urban and the rural Indo-Aryans themselves. Such a struggle may have contributed to the eventual transformation of the Harappans and their further dispersal.

References

Bhargava, M.L.
1964 *The Geography of Rgvedic India*. Upper India Publishing, Lucknow.

D'iakonov, I.M.
1985 On the original home of the speakers of Indo-European. *J. of Indo-European Studies*. 13 , 92-174.

Gamkrelidze, T.V. and Ivanov, V.V.
1985 The ancient Near East and the Indo-European question: Temporal and territorial characteristics of proto-Indo-European based on linguistic and historico-cultural data. *J. of Indo-European Studies*. 13, 3-91.

Gimbutas, M.
1973 The beginning of the bronze age in Europe and the Indo-Europeans 3500-2500 B.C. *J. of Indo-European Studies*. 1, 163-214.
1985 Primary and secondary homeland of the Indo-Europeans. *J. of Indo-European Studies*. 13 , 185-202.

Hicks, H.H. and Anderson, R.N.
1990 Analysis of an Indo-European Vedic Aryan head – 4th millennium B.C. *Journal of Indo-European Studies*. 18, 425-446.

Jarrige, J. F. and Meadow, R.M.
1980 The antecedents of the civilization in the Indus valley, *Scientific American*. 243, no.2, 122-133.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Joshi, J.P. and Parpola, A.
1987 *Corpus of Indus Inscriptions*. Memoirs of the Archaeological Survey of India, Delhi.
Kak, S.C.
1987a On the decipherment of the Indus script – a preliminary study of its connection with Brahmi. *Indian Journal of History of Science*. 22, 51-62.
1987b On the chronology of ancient India. *Indian Journal of History of Science*. 22, 222-234.
1988 A frequency analysis of the Indus script. *Cryptologia*. 12, 129-143.
1989 Indus writing. *Mankind Quarterly*. 30, 113-118.
1990 Indus and Brahmi: further connections. *Cryptologia*. 14. 169-183.
1991 Astronomy in Śatapatha Brāhmaṇa. Proc. of the Inter. Symposium on Indian and Other Asiatic Astronomies. Hyderabad, December.
Keith, A.B.
1909 *The Aitreya Āraṇyaka*. Oxford: Clarendon Press. Reprinted 1969.
Kenoyer, J.M.
1991 The Indus valley tradition of Pakistan and Western India. *Journal of World Prehistory*. 5. 331-385.
Macdonell, A.A. and Keith, A.B.
1912 *Vedic Index of Names and Subjects*. London. Indian Reprint Ed., Delhi, 1982.
Mahadevan, I.
1977 *The Indus Script*. Memoirs of the Archaeological Survey of India, Delhi.
Mitchiner, J.E.
1978 *Studies in the Indus Valley Inscriptions*. New Delhi: Oxford & IBH.

Mitchiner, M.
1973 *The Origins of Indian Coinage*. London: Hawkins Publications.
Mughal, M.R.
1982 Recent archaeological research in the Cholistan desert. In Possehl, G.L. (ed.), *Harappan Civilization*, Aris & Phillips, Warminster.
Pargiter, F.E.
1922 *Ancient Indian Historical Tradition*. London: Oxford University Press.
Possehl, G., (editor)
1982 *Harappan Civilization, A Contemporary Perspective*. Aris & Phillips, Warminster.
Possehl, G., and Raval, M.H.
1989 *Harappan Civilization and Rojdi*. E.J. Brill, Leiden.
Raikes, R.L. and Dales, G.F.
1986 Reposte to Wasson's sedimentological basis of the Mohenjo-daro flood hypothesis. *Man and Environment*. 10. 33-44.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Ratnagar, S.
1982 The location of Harappa. In Possehl, G.L. (ed.), *Harappan Civilization*, Aris & Phillips, Warminster.
Renfrew, C.
1987 *Archaeology and Language: The Puzzle of Indo-European Origins*. Jonathan Cape, London.
Roy, S.B.
1983 Chronological framework of Indian protohistory – the lower limit. *J. of the Baroda Oriental Institute*. 32 , 254-274.
Sengupta, P.C.
1947 *Ancient Indian Chronology*. University of Calcutta Press, Calcutta.
Shaffer, J.G.
1984 The Indo-Aryan invasions: cultural myth and archaeological reality. In J.R. Lukacs (ed.), *The People of South Asia*. Plenum Press, New York.
1991 The Indus valley, Baluchistan, and Helmand traditions: neolithic through bronze age. In R. Ehrich (ed.), *Chronologies in Old World Archaeology* (3rd Edition), University of Chicago Press, Chicago.
Shaffer, J.G. and Lichtenstein, D.A.
1989 Ethnicity and change in the Indus valley cultural tradition. In J.M. Kenoyer (ed.), *Old Problems and New Perspectives in the Archaeology of South Asia*, Wisconsin Arch. Reports, vol. 2, University of Wisconsin, Madison.
Sokal, R.R., Oden, N.L., and Wilson, C.
1991 Genetic evidence for the spread of agriculture in Europe by demic diffusion. *Nature*. 351, 143-145.
Tilak, B.G.
1893 *The Orion*. Poona. Reprinted 1989.
Wilson, J.V. Kinnier
1974 *Indo-Sumerian*. Oxford.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Apollo the Wolf-god

Daniel E. Gershenson

CONTENTS

APOLLO AND THE WOLF
EVIDENCE FOR THE WIND-WOLF
THE WOLF-NAME IN TOPONYMY
HEROES OF GREEK MYTH WHO BEAR THE WOLF-NAME OR PARTAKE IN ITS WIDER CONTEXT
THE DOLPHIN AND THE WOLF
THE WOLF AND DEATH
WEREWOLF-CONFRATERNITIES AND WIND EVIDENCE
EPILOGUE
THE STOIC EXPLANATION OF THE EPITHET *LYKEIOS*
THE TRIAL OF OLD THIES, 1691
LYKOS AND *LYKEIOS*: NOTES TOWARD A THEORY OF THE FORMS OF ANCIENT INDO-EUROPEAN RELIGIOSITY
INDEXES

ISBN 941694-38-0
Paperback, 156 pages
Price: $30.00

JOURNAL OF INDO-EUROPEAN STUDIES
Monograph Number 8

Institute for the Study of Man
6861 Elm Street, Suite 4H
McLean, Virginia 22101
Tel: (703) 442-8010 Fax: (703) 847-9524

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Six Swans and Artemis

Daniel E. Gershenson
Tel-Aviv University

The two Grimm fairy tales of *The Six Swans* (KHM 49[1]) and *The Seven Ravens* (KHM 25) are closely related and almost identical narratives in the collection of the Brothers Grimm.[2] We will be able to illustrate the common Indo-European origin of yet another aspect of Greek mythology, and specifically of the divinities Artemis and Apollo, if we can show, as we shall try to do, that these tales are thematically connected with myths and characteristics attaching to to them in ancient Greece.

By way of introduction we may note that no correspondences have been noted between *The Six Swans* and *The Seven Ravens* and any stories from outside the Indo-European linguistic area, despite the fact that many correspondences have been cited between Grimm's tales like *Cinderella*[3] and stories from the most varied sources around the world. Thus these tales seem to be native Indo-European. I shall present yet another Indo-European parallel to these tales, in addition to the known Old French, Spanish and Italian ones,[4] which may conceivably

---

[1] The tales in the *Collected Children's and Household Tales of the Brothers Grimm* are cited here with the letters KHM for Kinder und Hausmärchen.

[2] The Seven Ravens is number 25 in the 1819 edition of the KHM, but in the 1812 edition that position was held by *The Three Ravens*. The Seven Ravens is from a Viennese tale taken up in the later edition, but the earlier form of the story derived from the Hassenpflug family of Kassel who were of French Huguenot origin. *V.* the next note. The tale *The Six Swans* was told by Dortchen Wild, the daughter of a pharmacist and later the wife of Wilhelm Grimm who belonged to the same circle in Kassel. Cf. Jack Zipes, *The Brothers Grimm* (New York & London 1988) 50. Number 9, *The Twelve Brothers*, is also closely related to these.

[3] J. Bolte and G. Polívka, edd. *Anmerkungen zu den Kinder- und Hausmärchen der Brüder Grimm* (Leipzig 1913) and cf. for *Cinderella* M.R. Cox, *Cinderella, 345 variants of Cinderella, Catskin and Cap o' Rushes abstracted and tabulated with a discussion of mediæval analogies and notes* (London 1893).

[4] Gaston Paris, *Romania* 19 (1890) 315ff., discusses four closely related Old French sources, one of them deriving from the Spanish, all of them traceable to *chansons de geste* that

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lie at the origin of the Grimm tales.[5]

Let us begin by examining the German tales. *The Six Swans* tells of a king who went into a wood where he was held captive by a witch, and only given his freedom when agreed to take her daughter to wife. His new wife frightened his first wife's seven children, a girl and six boys, so that they withdrew to a well-hidden castle where their father visited them often. But their wicked stepmother found the castle, came, and turned the boys into swans[6] by throwing six shirts over

---

deal with the origin of the swan-knight. These are, in the order he deems chronological: first *Dolopathos*, then *Elioxe*, the third derived from the Spanish *Gran Conquista de Ultramar* which he calls *Isomberte*, and finally *Beatrix*; they all parallel the main action of *The Six Swans*, and indeed in all of them there are six boys and their sister. Another Old French partial parallel to *The Seven Ravens*, in which seven sons and one daughter appear, are the children of Aymeri and Hermingarde in the *Cycle de Narbonne*. That cycle has been studied exhaustively by Joël H. Grisward, *Archéologie de l'Épopée Médiévale* (Payot, Paris 1981). The Irish parallel, the tale of the the children of Lir, or the four white swans, is brought by Ferdinand Lot, *Romania* 21 (1892) 62ff.

[5] We may add to the previous note, the fact that *The Twelve Brothers* (*KHM* 9), a tale that is closely related to the two we are discussing, and one we shall treat of below, was collected by the Brothers Grimm from Julia and Charlotte Ramus, the daughters of a French pastor, while *The Three Ravens*, as we have noted, was told by the Hassenpflug family, which also had French forebears (J. Zipes, *Op. cit.* 49).

[6] The association of the swan with Apollo has often been noted in regard to the swan-knight of Western European tradition, Lohengrin, i.e. the Lotharingian Garin, who like Apollo is a swan rider (cf. Encyclopedia Britannica, 11th ed., s.v. Lohengrin vol. 16.922), but today we know these are both reflexes of a much more ancient swan-rider figure found in Neolithic strata in excavations in Rumania. Lohengrin is one of six brothers turned into swans, according to one tradition, and the talking swan that escorts him asleep in his ship is the brother whose transformation back into human form was not entirely successful, in the version brought by the Brothers Grimm, or who, in another version, remained a swan. "The beautiful story of the swan is founded on the miraculous origin of the swan-brothers, which I connect with that of the Welfs," writes Jakob Grimm in *Teutonic Mythology* tr. J.S. Stallybrass (London 1893) vol. 1 p. 370; he also finds that the Anglo-Saxon name of this hero was originally Scéaf or Scoup (i.e. sheaf), the ancestor of the Danish tribe of the Skildungar. Here we may note this story's connection to agriculture, reminiscent of Apollo, for which cf. D.E. Gershenson, Apollo the Wolf-god, *JIES Monograph No. 8* (McLean Virginia 1991). Another trait reminiscent of Apollo in the story of the swan rider is cited by J. Fontenrose, *Python* (Berkeley/L.A. 1959) 543, who quotes P.S. Barto, *Tannhäuser and the Mountain of Venus: A Study in the Legend of the Germanic Paradise* (New York 1916) 58-71, 103-108, to the effect that the story of Lohengrin introduces the Teutonic counterpart of the Land of the Hyperboreans, namely the Venusberg, or the cave of Frau Holda, because Tannhäuser's progenitor is Lohengrin (the son of Parsival in Wolfram von Eschenbach's song) who came out of the grail paradise with the help of the swan, and returned there when his divine nature was

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

them as they ran to meet her, unaware of who she was. Their sister, who has stayed inside, ran away from the castle, fearing her stepmother might return, and in the forest she found a neat little house with six beds in it, where she rested until six swans entered and turned into her brothers. They told her they could stay only a quarter of an hour, and that she too should leave, because it was a bandits' lair. They also told her how she might undo the spell that was on them by weaving six shirts for them out of "star-flowers" (in the English version "moon-flowers"),[7] one a year, noy speaking or laughing all that time. She found herself a bower in a tree and set to work, but the prince of the land found her there and took her to wife. His mother hated her for her silence and her obscure origin, and when she bore a child, made away with it and smeared her face with blood, saying she had borne a dog and devoured it; and she did the same each time she was delivered of a child. As a result the poor girl was brought to the pyre, having finished five shirts fully, and one missing a sleeve, but six swans flew down and saved her. They were her brothers who became boys again, as she could tell now, but the youngest had one swan's wing instead of an arm. The evil mother-in-law, as well as the wicked stepmother, were punished and the children restored to their father.[8]

The story *The Seven Ravens* tells of a father of seven sons who only wanted a daughter. His wife bore a daughter so sickly that she had to be baptized at home, whereat he sent his eldest son out to fetch water. The other boys ran out with him and in the end the pitcher fell into the well. They returned without water, and their father cursed them in his anger, wishing they might turn into crows, and so they did. The girl grew strong and beautiful. Eventually learning she was not an only

---

recognized. A remarkable parallel to these ideas is found in a Tartar song, cited by J.M. Frazer, *The Golden Bough*, abridged edition (New York 1923) 676, about a swan-woman whose soul was seven little birds in a golden casket underneath a rock in the very center of the sea.

[7] "Star-flowers" is a better parallel to the story of the seven ravens, where the stars help the searching sister, not the moon.

[8] Another folktale from the Sudetenland, brought by Bolte-Polívka, *op. cit.* 1.427ff., is essentially identical to this story, but has the girl's brothers turned into ravens rather than swans. Number 25 in the 1812 edition of the *KHM* told of three boys cursed by their mother and turned into ravens. Their sister, already full-grown when this occurred, went to find them, taking with her food and drink and a chair. On her way, three ravens flew overhead, and a ring, which she recognized as belonging to her youngest brother, fell at her feet.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

child, she set out to find her brothers, taking with her only her parents' ring, a pitcher of water, a loaf of bread, and a chair. She came to the sun, who was too hot and ate children, to the moon, who was too cold, and said, "I smell the flesh of humankind," and finally to the stars, each one sitting in its chair. The morning star rose to meet her and gave her a drumstick to open the gate of the glass mountain her brothers were imprisoned in. Having lost the drumstick on the way, she cut off her little finger and used it instead to open the gate. Once inside she met a dwarf who asked what she wanted, and brought her to her brothers' dwelling, where she found seven places set, each with a full plate and a full cup. Drinking from each in turn, she hid behind the door when she heard the rush of wings, but not before she had dropped her ring in the last cup, and when the brothers returned they knew at once that a human being had been at their food and drink. The youngest found the ring in his cup, recognized it as his parents', and wished his sister were there so that they might be saved. Thereupon she came out from behind the door, they became human once again, and they all returned home.

A third fairy tale in the collection of the Brothers Grimm (*KHM* 9), *The Twelve Brothers*, is a variant of the same tale. Here the father of the twelve boys is violent and his reaction to the children's desire that the next child be a boy is to declare that he would behead all twelve if a girl were to be born. "I'd rather behead them all myself than let a girl grow up among them," he said. Their mother sent them away to the woods, saying she would hang out a red flag should she bear a girl, and a white one should she bear a boy, exhorting them to flee into the wide world should the flag be red. Such was the case, but the boys stayed on in the forest, not heeding their mother's advice, and killed any girl who approached them. They would hunt for food, and one would stay at home to cook. One day their sister, already grown up, learned from the washerwoman she was watching that the twelve shirts she saw her hanging out belonged to her brothers, and taking the shirts, set out to find them. Coming on their lair, she was spared by her youngest brother who took pity on her and agreed to let her serve them. When she showed them the shirts they recognized her. Once, wandering in the woods she found twelve lilies and plucked them, whereupon an old lady appeared who told her the lilies were her brothers, and that by plucking them she had turned them into twelve

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ravens, but she could release them if she stayed silent for twelve years.

The rest of the story parallels *The Six Swans* almost exactly. Here the shirts play a different role, as we have seen, and the fire of the stake causes the twelve ravens to resume human form. The sister's wicked mother-in-law ends up in a vat of boiling oil, filled with poisonous snakes (*sic!*).

At several points we may note resemblances between elements of these tales and the mythic histories of Artemis and Apollo from Greece: (1) The numbers six and seven are earmarks of the cult of Artemis and Apollo, the birthday of Artemis having been celebrated on the sixth day of the Delian month Bysios, corresponding to the Athenian month Anthesterion (February-March),and the birthday of Apollo on the next day, the seventh. In Athens the sixth and seventh of the month of Thargelion (May-June) were celebrated as their birthdays. The seventh of every month at Athens was sacred to Apollo as well, and among his epithets were Ἑβδομαγέτης,[9] Hebdomagetes, "the leader of sevens," Ἑβδομαγένης, Hebdomagenes, "born on the seventh," and Ἑβδομαῖος, Hebdomaeus, "the seventh." In fact, Apollo seems to have been the god of what we would call a week, the seven-day quarter of the lunar month, in Greece; for he had the epithets Εἰκάδιος,[10] Icadius, "twentieth,"[11] and Νουμήνιος, Numenius,[12] "of the New Moon," and one source speaks of his association with the full moon, as well.[13] In *The Six Swans* there are seven children, six boys and one girl, and in *The Seven Ravens* there are again seven, because the sister is an only child when the seven boys are in the form of ravens.

(2) Swan and raven are both associated with Apollo in Greek mythology. As we have mentioned above, Apollo goes to the land of the Hyperboreans in a chariot drawn by swans,[14] and the account we

[9] Aesch. *Seven* 783ff., and cf. also Hes. *Fr.* 362 MW for the importance of the new moon and the seventh of the lunar month.

[10] *EM* 298.1.

[11] This may be the twentieth day after the New Moon, and hence the twenty-first, the night of the last quarter.

[12] For Apollo's epithet Numenius and patronage of the New Moon *v.* Hdt. 6.57, and *FGrH* 3B328 (Philochorus) fr. 88b.

[13] Plut. *Dion* 23.

[14] Alc. 307 (c) Lobel and Page.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

have of his birth on the island of Delos[15] tells how the swans of Pactolus came and circled over Delos seven (*sic!*) times when he was born. According to Hecataeus of Abdera, Artemis and Apollo's mother Leto had been born among the Hyperboreans.[16] Apollo's birth was heralded by a chorus of singing swans, as was his presence in the land of the Hyperboreans.[17] The nymph Cyrene too, the mother of Aristaeus by Apollo, rode on a chariot drawn by swans.[18]

Apollo is the god of prophecy, and the raven is the bird of prophecy.[19] Apollo is connected to this bird in a number of other ways, too. The raven was said to have been sent out by Apollo to find water, and to have been Apollo's constant companion as well,[20] and Apollo courted Coronis, whose name means "raven," and she bore him Asclepius.

(3) In the Grimm tales the brothers in bird shape depend on their sister to release them in the end, so that an essential feature of the stories has siblings of opposite sex facing a common danger, and a faithful sister proffering aid to her brothers. Among the deeds of valor of Apollo we find him, whose birds are the swan and the raven, and Artemis, his sister (here not identical to Hecate,who is an only child), acting in unison in the face of mortal danger. This trait is found in certain versions of two of Apollo's most celebrated deeds, striking down Tityus the son of Zeus who attacked their mother Leto,[21] and vanquishing the Python at Delphi.[22] Another more famous, or notorious,

---

[15] Call. *Del.* 249-253.

[16] D.S. 2.47.

[17] Great numbers of singing swans that came from the Rhipaean Mountains to celebrate Apollo's arrival among the Hyperboreans are told of by Ael. *NA* 11.1. They may be identified with the singing swans that flew over Ocean and swam on its stream at the ends of the earth on Hercules' shield, according to Hes. *Scut.* 316, Eur. *Fr.* 773.31-32N², and Ar. *Av.* 769-775 (singing the praises of Apollo).

[18] *FGrH* 3 F 58, Pherecydes of Athens.

[19] *V.* on this the sources brought in Gossen *s.v.* Rabe *PWRE* IA1 (Stuttgart 1914) cols. 21-22.

[20] Ae. *HA* 1.47 and 48.

[21] The sources which portray Artemis and Apollo acting together in overcoming Tityus are Paus. 3.18.15, a scene on the throne of Bathycles, and 10.11.1, a Cnidian sculpture at Delphi; Call. *Hymn* 3.110, and Scholiast; Apollod. 1.4.1.; Suid. T696; Vat. Myth. 1.13; and Anth. Pal. 3.14.

[22] Paus. 2.7.7f. relates that the temple and cult of Pitho (Persuasion) at Sicyon were

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

encounter in which they acted together was the revenge they took on the children of Niobe and Amphion, six girls and six boys, according to the *Iliad*, and seven of each in the tragedians' version, on behalf of their mother Leto.[23] The theme of a faithful sister coming to the aid of her sibling is prominent in one version of the story of Leto, too. The island of Delos was named Ἀστερίη, Asterie, by the gods, "being a far-shining star of land in the dark sea."[24] According to Hyginus,[25] Asterie, the sister of Leto, was turned into a quail by Zeus after she spurned his love, and then thrown into the sea, whereupon she was turned into the floating island Ortygia, "the quail island." Zeus later instructed the North Wind to transport Leto, who was carrying his children, to the island to save her from Python who was pursuing her, and then the island came to rest. Leto then bore Artemis and Apollo there under an olive tree. Later the island was renamed Delos.

Pindar's version, reconstructed from the Oxyrhynchus Papyrus,[26] seems to have been as follows: Asterie was the daughter of Coeus, as was Leto; both of them were pursued by Zeus, but Asterie escaped, or else refused his advances, and ended in the sea transformed into the island of Delos, either because she fled him and jumped into the sea, like the Cretan Britomartis, also called Dictynna, an Artemis figure who was pursued by Minos, or else because he threw her in in his disgust at her demur. When Leto. carrying Zeus' children, could find no land to give birth in because of Hera's enmity, Asterie, her sister, now turned into an island, came to her aid and gave her a spot where she might be delivered of her children. Artemis herself has the epithet Ortygia,[27] and Asterie is named in a number of sources as the mother of Hecate[28] a goddess often identified with Artemis.

(4) In *The Seven Swans*, as well as *The Twelve Brothers*, the silent

established after Apollo and Artemis had come to Aegialea to be purified after they had slain Python. The people of Aegialea were afflicted by a plague, and were told they might free themselves of it by sending *seven* boys and seven girls to the River Sythas (Hog River).

[23] Hom *Il.* 24.605-607; Apollod. 3.45; Ovid *Met.* 6.215-312.

[24] Pind. *Fr.* 156 Turyn.

[25] *Fab.* 58.

[26] *Pap. Oxyrh.* 841, frag. 19 col. 1, Pi. *Pae.* 7b,36ff.

[27] Soph. *Trach.* 212ff.; Call. *Ep.* 61.2 calls Delos Ortygia.

[28] Hes. *Theog.* 404ff., Apollod. 1.2.2, 4, and Hyg. *Pref.*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sister of the birds is pictured by her wicked mother-in-law as the mother of dogs (of animals), and as the bloody-mouthed devourer of her children. Artemis appears in the role of the Mistress of Animals, *δέσποινα θηρῶν*. On both handles of the famous François vase, as well as a number of other archaic vases, she appears winged, holding an animal in each hand, usually lions and panthers, but also deer, swans, and so forth, in virtue of which she has been identified as the Mistress of Animals in those portrayals. As such it seems she was the goddess of the holocaust of all sorts of animals at Patrae.[29] Artemis was known as *Ἐλαφηβόλος*[30] Elaphebolus, "huntress of deer," and among her other epithets are found *Ἐλαφοκτόνος*,[31] Elaphoctonus, "the slayer of deer," *Θηροφόνη* or *Θηροφόνος*,[32] Therophone or Therophonus, "slayer of animals," and *Ἀγροτέρα* or *Ἀγροτέρη*,[33] Agrotera, "the huntress"; she was also known as the slayer of women in childbirth, and of infants, particularly under the epither Iphigenia,[34] and as Artemis Orthia in Sparta young warriors were whipped on her altar until it was covered with blood.[35] Artemis Orthia, also called Lygodesma ("tied with withies") there, was identified with Artemis Iphigenia in many places.[36] Her epithet Lygodesma suggests that she herself may have been thought of as the sacrifice, like Iphigenia, whose sacrifice at Aulis is well-known.

In *The Seven Ravens* the faithful sister is mutilated by the loss of her little finger, another feature reminiscent of Artemis, in the story of her appearance as Condyleatis, the Hanged Goddess, and of Orestes'

---

[29] Paus. 7.18.8-13 tells of the temple of and yearly sacrifice to Artemis Laphria at Patrae, when all sorts of birds, wild boars, deer, gazelles, wolf-cubs and bear-cubs, wolves, bears, and all sorts of animals were thrown into a great fire on a very large earthen altar constructed for the purpose.

[30] *H. Hom.* 27.2, Anacr. *Fr.* 1.1-3. Nonn. *D.* 44.197 *et al.*

[31] Eur *IA* 113ff.

[32] Thgn. 11; Ar. *Th.* 320f. *Θηροφόνη* is found in Eur. *HF* 378f.

[33] Hom. *Il.* 21.471, Ar. *Th.* 116, *Lys.* 1262, Nonn. *D.* 48.349, 840.

[34] As well as their patron; she was goddess of childbirth at Athens (Eur. *IT* 1440f.) and at Hermione (Paus. 2.35.1), Aigira (Paus. 7.26.5), and Argos (Paus. 1.23.9, 33.1), and *v.* in particular Papadimitriou, J. "The Sanctuary of Artemis at Brauron," *Scientific American* (June 1963) 110-120.

[35] Paus. 3.16.7-11.

[36] Hes. *s.v.*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

finger.[37] The heroine Iphigenia, a double of Artemis, as we have seen, was the daughter of Agamemnon and Orestes' sister; she was sacrificed at Artemis' demand on the altar at Aulis on the shores of the Euripus, and transported miraculously to the Taurian land, according to one version of her tale.

(5) The faithful sister, her brothers' savior, is saved from the pyre by her brothers' arrival in a reversal of roles in *The Six Swans*; in an almost historical occurrence Artemis' brother Apollo too was said to have saved King Croesus of Lydia from the pyre, either by extinguishing the flames or by carrying him off to the land of the Hyperboreans.[38]

(6) The tales in *KHM* contain elements of the story of Goldilocks, where the strange house the little girl enters belongs to a family of bears, and she tries all the food on the table and all the beds. In *The Six Swans* we read: "Finding in the forest a neat little house with six beds in it, she rested there until six swans entered and turned into her brothers. They told her they could stay only a quarter of an hour, and that she too should leave, because it was a bandits' lair," and a passage more reminiscent of *Goldilocks* again in *The Seven Ravens*: "In her brothers' dwelling she found seven places set, each with a full plate and a full cup. Drinking from each in turn, she hid behind the door when she heard the rush of wings, but not before she had dropped her ring in the last cup, and when the brothers returned they knew at once that a human being had been at their food and drink." If we consider the bear as properly in the context of these tales, we must remember that that animal belongs to Artemis in Greece, most especially at Brauron in Attica, where, as we have seen, Artemis Brauronia had the epithet Iphigenia and was the patroness of childbirth.[39]

---

[37] For Condyleatis *v.* Paus. 8.23.6, and nearby, according to Paus. 8.24 was a Tomb of the Finger near a sanctuary of the Maniae, the goddesses of madness, on the road from Megalopolis to Messene. Orestes' finger was buried here, bitten off in the madness he suffered when he took his (and Iphigenia's) mother's life. Orestes came to his senses when he performed this operation, whereupon, all at once, he saw the spirits of madness, the Erinyes, or Furies, who pursued him, as white instead of black. He is a double of Apollo in many respects (*v. infra*).

[38] *V.* for the former version Hdt. 1.87, and for the latter Bacch. 3.

[39] *V.* n. 33 *supra*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

In her festival there girls danced dressed in bears' skins; in Arcadia she appeared as Callisto, the mother of the eponymous hero of the land, Arcas, named after the bear, ἄρκτος. Callisto was transformed into the constellation of the Great Bear in the night sky in the Northern hemisphere.[40]

(7) In their plots the Grimm tales recall certain aspects of the myths of Artemis and Apollo. Most remarkable is the plot of *The Six Swans*, where the brothers are born again, as it were, into the world of their sister who had no memory of them at all, through her agency. This tale resembles an account we may reconstruct of the birth of Apollo assisted by his sister Artemis; for in *H. Hom. Ap.*15-16 we learn that Artemis was born on the island of quail, Ortygia, and Apollo only later on Delos, so that here Artemis was present at her brother's birth. Another version of the story tells of the pregnant Leto pursued by the Python, sent by Hera,[41] and, as we have seen, there are ancient sources that make Artemis Apollo's assistant in his battle with Python.[42]

(8) Just as the boys in the shape of swans fly off and return only much later. and as the ravens live in a glass mountain which corresponds to a Neverneverland like the land of the Hyperboreans in Greek myth, so in the Greek imagination Apollo returned each year after having flown away north to the mythical land of the Hyperboreans.

(9) In a singular Greek tale Hera, the wife of Artemis and Apollo's father Zeus, who opposed the birth of Apollo, saw her own child Typhon,[43] succumb to the power of Zeus. She had borne him parthenogenetically in her opposition to the birth of Athena, who had emerged full-grown from Zeus' head. Thus Hera came by her requital. Her attitude to Zeus' children expressed in these tales, and her ultimate punishment, correspond to to the attitude and actions of the taciturn sister's mother-in-law in the Grimm fairy tales of this ilk.

(10) The unhappy love affair of Apollo and Daphne, as well as the

---

[40] Apollod. 3.8.2.1f.

[41] Serv. *ad Aen.* 3.73, Lact. Plac. *Theb.* 5.533 and *Ach.* 206, Lucan *BC* 5.78-81, Lucian *DMar* 10, Hyg. *Fab.* 140, *inter alia*, present this version of the story.

[42] *V.* n. 21 *supra*.

[43] Hom. *H. Ap.* 307-310 and 351-2.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

etiology of the Festival of the Ecdysia in Crete, and the Arcadian version of the story of Daphne, find parallels in the Grimm tales in the recurring barrenness of the father's wife in *The Seven Ravens*, and even more in the way the brothers murdered any girls who came upon them in *KHM* 9, *The Twelve Brothers*. The story of the origin of the Festival of the Ecdysia in Crete was as follows:[44] Galatea, Eurytius' daughter, bore a daughter to her husband Lamprus. He had ordered the child killed were it a girl, but Galatea brought the child up as a boy in order to save its life. When she could no longer hide the truth, she brought the girl to the temple of Leto, who changed her into a boy in answer to her mother's prayers. In the Arcadian version of the story of Daphne,[45] Leucippus, son of Oenomaus, king of Pisa, fell in love with Daphne, but she spurned him because she would have nothing to do with the male sex. He gave up wooing her after his first try, but he dedicated his hair to the River Alpheus, let it grow long and wore it like a girl, disguised himself as a girl, and went to Daphne, saying he was Oenomaus' daughter and wanted to be her friend. He was a welcome hunting companion for her, because of his noble bearing and his proficiency in the hunt. Some say Apollo was jealous of Leucippus because he managed so well in his love, and when Daphne and the other girls deciede to go swimming in the river Ladon, they stripped Leucippus, against his will, and discovering him to be no girl, killed him with their arrows and their daggers.

(11) The ultimate transformation of the six swans, who may stands for the planets visible at night, or the seven ravens, who may represent the heavenly bodies not fixed in the sphere of the fixed stars, into young men is typical of the Apollonian theme of natural and irreversible sequence of process; for their transformation parallels that of the hardly human fetus into the child, and that of the child, hardly mature, into the adult, while in a well-known mythological transformation the putative evil mother turns out to be the saving sister.

(12) Perhaps one of the most striking agreements in theme between the personage of Artemis and the stories from *KHM* concerns *The Twelve Brothers*, *KHM* 9. In that fairy tale the brothers and their

---

[44] From Ant. Lib. 17, based on Nic. *Heteroeumena* Bk.2.

[45] Paus. 8.20.2.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sister both appear as blighters, on one hand, and as saviors and restorers, on the other. Only here is the role of the evil mother given to the saving sister; for by plucking the twelve lilies she finds growing in the field she is
responsible for her brothers' transformation into birds, while she holds the key to their return to human shape by keeping silence for twelve years. Her twelve brothers kill girls who approach their dwelling, but her youngest brother saves her life, and his brothers all join him in the rescue operation. These features reproduce the theme of the one who inflicts a wound functioning as its healer expressed in the Greek proverb *ὁ τρώσας ἰάσεται*, "the wounder shall heal."[46] This proverb, originally applied to Achilles in the story of Telephos, is particularly suited to Artemis; for her epithets of the hunt, cited above, and her role as a death-goddess who demands human sacrifice[47] contrast with other epithets of hers referring to her role as protectress of the young, like *παιδοτρόφος*, and *κουροτρόφος*,[48] "fostering children," and her appearance as defender of the pregnant hare fallen prey to the eagles in the chorus' first stasimon in Aesch. *Ag.*

It is noteworthy too that these related fairy tales from *KHM* are almost exactly parallel in theme to the story of Orestes and Pylades among the Taurians, told by Euripides in *IT*. In that story the two friends, or blood-brothers, are rescued from death on the altar, the fate of all strangers who come to that shore, by Iphigenia, the sister of the one, who was the sacrificing priestess before she was revealed as the saving sister. As we have noted, Iphigenia was a cult epithet of Artemis, and there can be no doubt that the relationship between her and her brother Orestes parallels that between Artemis and Apollo. Orestes and Pylades escape from the hostile temple with the statue of the goddess; the same eerie temple reappears often in *KHM* in the

[46] Leutsch-Schneidewin, *Corpus Paroemiographorum Graecorum* (Göttingen 1839, repr. Olms, Hildesheim 1958) 2.763 (Mantissae Proverbia II 28). The relation expressed here is similar, though not identical, to the term "the wounded healer," applicable particularly to the shaman (cf. Joan Halifax, *Shaman: The Wounded Healer* [New York 1981]), and also no doubt to Artemis, who suffers as Artemis the Hanged, n. 36 *supra*. For the Hebrew parallel cf. Deuteronomy 32.39.

[47] *V.* Wernicke in *PWRE* 2 (1895) cols. 1348, 1380, 1395.

[48] D.S. 5.73.5f.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

guise of the hidden town, the glass mountain, or the tree-house, or house in the forest.[49] Just as Iphigenia is transformed from an evil death-threatening priestess into the saving sister, or wife (she marries Pylades), so the vilified sister in *KHM* 9, 25 and 49 turns out to be her brothers' savior.

In Apollo's history the hostile temple seems to appear more than once. It may be the beeswax and feathers temple built for Apollo by the bees and transported by him far away from Delphi to the land of the Hyperboreans,[50] or else the cave of the monster, which may be male or female, Delphyne or Python, at the Corycian ("the leather bag") Cave.[51] These monsters are the unliberated hypostases of Apollo and Artemis, their earth-monster counterparts stuck in the bowels of the earth, or, in other words, in the hands of the wicked mother or stepmother, the role played by Hera, the mother of Typhon, in the story of Apollo's birth.

One difference between the Greek myths and their reflexes in the European tales is illustrated by the way the boys' sister in *The Seven Ravens* uses her little finger, which she has cut off, to open the glass mountain. In the Greek myth it is Apollo, the brother, who opens the cave and destroys the phallic monster Tityos, whereas the sister plays a similar role in the European version. In general we find sex-reversals, as well as mirror imaging,[52] in Greek mythology. For example, hanged figures in Greek myth, among whom we find Artemis,[53] Phaedra,[54] Antigone,[55] Erigone,[56] Helen of Troy,[57]

---

[49] *The Twelve Brothers* was reworked by Wilhelm Grimm, who made the house in the forest into a cosy refuge for children who have lost their father, a "common, orderly household" (J. Zipes, *Op. cit.* n. 2 *supra* 40). The reason for the alteration has been shown by those who emphasize the biography of the Brothers Grimm to be a reflection of the fact they lost their father and suffered on that account. Nevertheless, the house in the forest is of its nature dangerous and suspect, as in *The Six Swans*, where it is a bandits' lair.

[50] Paus. 10.5.9, the second temple of Apollo built at Delphi according to the Delphians.

[51] J. Fontenrose, *Op. cit.* (n. 6 *supra*) 22, 411.

[52] D.E. Gershenson, "The Beautiful Gorgon and Indo-European Parallels," *The Mankind Quarterly* 29, no. 4 (1989) 387-388.

[53] Paus. 8.23.6, as we have already seen; Clem. Al. *Protr.* 2.38.

[54] Eur. *Hipp.* 1252.

[55] Soph. *Ant.* 1221.

[56] Hesych. *s.v.*; *EM s.v.* αἰώρα, ἀλήτις.

[57] For Helena Dendritis *v.* Paus. 3.19.10.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Jocasta,[58] and the servingmaids in the *Odyssey*,[59] are all female,[60] whereas other traditions know only male hanged figures.[61] We have seen a similar case of sex-reversal in the parallel between the sister who helps her brothers in *KHM* and the story of Leto and Asterie, where one sister helps the other, in Greece.

Coronis, the mother of Asclepius identified with the crow by her name, was killed in childbirth because she was carrying Apollo's child. Her story parallels that of the sister whose children are taken from her in *KHM* 9, 25, and 49. In the myth of Asclepius, then, Apollo himself plays the role of the wicked stepmother, usually played by Hera or Artemis in Greek myths; if this trait is original in the Indo-European substratum of these stories, it has been suppressed in the European versions, unless we can find its echo in the fact that swans are obviously phallic, and destructive, and that ravens, or crows, are birds of death. We may note too that Apollo assumes a place of much greater importance in the Greek stories; he was, after all, a great god.

The culmination of the stories in *KHM* is the birds' transformation into men again. Neither their change of shape nor the little jackets woven of leaves or of moon-flowers for them recur in the Greek myths,[62] but, on the other hand there is no mention in the tales of

---

[58] *Od.* 11.278 and Soph. *OT* 1253.

[59] *Od.* 22.471-473. In the *Odyssey* the noose (βρόχος) is mentioned but the verb ἀπάγχομαι does not occur. Of all the hanged figures in Greek mythology the servingmaids are the only ones who do not commit suicide by hanging, but are hanged. *V.* the next note.

[60] The verb ἀπάγχομαι, "hang oneself," often used in these contexts appears in a variant (ἀπαγχίζομαι) in D.L. 6 (Diogenes) 52: "When Diogenes saw some women hanged on an olive tree, he remarked. 'Would that every tree bore fruit like that!'" If the story is not apocryphal it is another example of hanging women (as well as of misogyny) in ancient Greece. Another story there (6.61) tells that when Diogenes was once gathering figs someone told him someone had recently hanged himself (ἀπήγξατο; it may have been a woman in this case too) from that tree, whereupon he replied, "I am now removing the pollution."

[61] It is enough to mention the hanged god Wotan in the Teutonic tradition, Haman in the Book of Esther, and the Christian crucifix to see how unthinkable a hanged woman would be in any of these contexts.

[62] There does not seem to be any Greek story that presents the transformation of a bird into human shape the way the story of Scéap or Scoup does in the Teutonic linguistic area. The figure of Kyknos (Cycnus) was said by Hesiod (Fr. 237 MW, from the *Ehoiai*) to have received his name ("Swan") because his skin was as white as a girl's, and not because he once was a swan. If there once existed stories like those of swan ancestors in Northern Europe in ancient Greece, they were rationalized; any metamorphosis into a bird is final, and occurs,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the *KHM* of the pile of gold on which the monster that is released sits in the Apollo-Python myth, however familiar that theme may be from the story of Alberich in the *Rheingold*.

Comparisons between Greek myth and modern fairy tales are not to be slighted. Stith Thompson wrote:[63] "The attempts to define Märchen or fairy tale turn out to be as unsatisfactory as those to make a strict definition of myth. The two forms continually flow into each other and it is likely that the distinction between Märchen and other types of folk narrative is largely confined to Western culture." Clearly the two forms are essentially one, and are probably equally ancient.

Just as the Greek and Northern European versions of this ancient myth differ in their emphases, with greater confusion about the role of the sexes in the Greek version, so do the myths concerning Artemis and Apollo include many more features than the less well developed tales in *KHM*. One of these is even the feature reminiscent of another German tale, that of the Rheingold.

The parallels between Artemis and Apollo and these fairy tales are more evidence of the Indo-European provenance of these Greek gods. Kerényi was surely right when he pointed out the parallel between Apollo and the Lohengrin figure of Germanic story, but the swan rider is an ancient conception, as we know from Cucuţeni-Tripolye figures of great antiquity. I have shown the existence of a number of parallels between myths and epithets of Apollo and Indo-European themes elsewhere.[64] The parallels evidenced here may be considered further evidence for Artemis and Apollo as essentially Indo-European figures.

---

in the familiar etiological pattern, as the dénouement of a hero's career. Cf. Serv. *ad Aen.* 10.189, who relates that Cycnus, king of the Ligures, was turned into a swan by Apollo after Phaëthon's death.

[63] "Myth and Folktales," in *Myth: a Symposium*, ed. Thomas Sebeok Indiana U. Press 1958) 174.

[64] D.E. Gershenson, *Op. cit.* (n. 6 *supra*).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Leading the field in sociology and the related social sciences:

sociological abstracts (sa)

and

Social Planning/Policy & Development Abstracts (SOPODA)

Our subject specialists track the broad spectrum of theoretical and applied sociology from the more than 1,800 discipline-specific and related journals published in North America, Europe, Asia, Africa, Australia, and South America.

sa and **SOPODA** each offer you in-depth abstracts and precise indexing of timely journal articles and books, enhanced dissertation listings, and a bibliography of book reviews from the journals screened.

sa and **SOPODA** are available together on the **sociofile** CD-ROM and are hosted online by BRS, DATA-STAR, DIALOG, and DIMDI. Hardcopy subscriptions can be ordered from the address below.

The **sa** and **SOPODA** information products are supported by:

- Database-specific user manuals
- The latest journal coverage list
- The **sociofile** Quick Reference Guide and User's Handbook
- The ***Thesaurus of Sociological Indexing Terms***
- Your Guide to Searching **sa** using a Personal Computer
- A professional workshop program

The **sa** family of databases — your fast track to the information you need, in the format you want.

sociological abstracts, inc.

p.o. box 22206 • san diego, ca 92192-0206
phone (619) 695-8803/FAX (619) 695-0416/Help Desk (800) 752-3945

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

New Thoughts on an Archaic Artifact

Lotte Motz
Oxford, England

A small statuette of bronze holds a place of honor in the National Museum of Iceland. Measuring 6.7 centimeters in height, it represents a seated man, naked except for a conical cap on his head, his face showing an abundant growth of hair. His moustache is divided, the lower portion lies parallel to his upper lip, the upper portion curls on his cheeks, reaching upwards almost to his eyes. His two hands clasp an object which also is divided in the middle; this tool or object terminates in a formation resembling a clover leaf. Two of the rounded, knoblike terminals rest on the man's knees, while the third one protrudes between his legs (Fig.1).

The artifact was discovered in 1815 or 1816 on the farmstead Eyrarland in northern Iceland, and was sent to the Museum of Antiquities in Copenhagen.[1] It was described in 1820 in the journal *Iduna* which also included drawings of the front and rear aspect of the find (Fig.2). It remained in Copenhagen until 1930 when it was returned to Iceland.

The sculpture is carefully executed and testifies to the skill and craftsmanship of the artisan. The first who set eyes on it, on its discovery, as well as later scholars, never were in doubt concerning the identity of the little man in bronze: the clasped object is þórr's hammer which he wields so mightily against the giants. The statuette itself therefore is the god þórr. As an image of þórr the sculpture is known to students of Old Norse tradition.

In a recent article Kristján Eldjárn has taken objection to this view. He declares that the three-knobbed implement shows no resemblance to a hammer and he points to another sculpture which bears a strong

[1] Eldjárn, 75; a Danish merchant, J. Gudmand, acquired the object found on the farm. Descriptions state that it was gilded.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

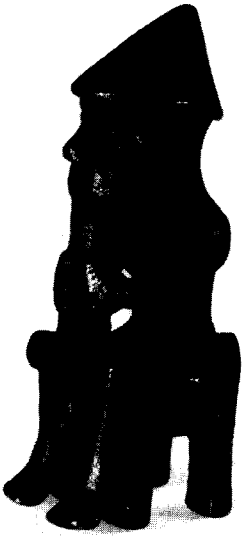

FIGURE 1: National Museum in Iceland.

FIGURE 2: Eldjárn, Fig. 2.

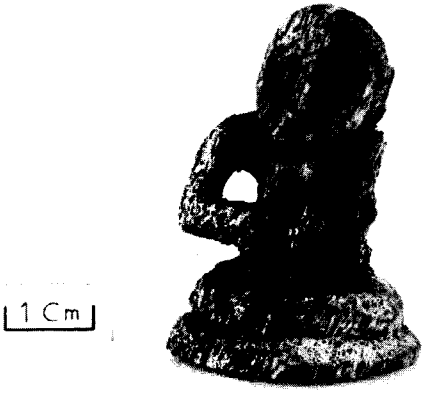

FIGURE 3: National Museum in Iceland.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

likeness to the statuette of bronze. It was found in a Viking grave at Baldursheimar in Iceland, measures 3.9 centimeters in height, is carved of whalebone, and portrays a man seated on a platform. He parallels the gesture of the bronze statuette in holding a divided implement which issues from beneath his mouth. This does not end, however, in knoblike extensions (Fig. 3).[2]

The grave at Baldursheimar contains besides the whalebone sculpture a die and gaming pieces of walrus teeth. These belong to the game called *hneftafl* of which we do not know the rules. We know, however, that one of the pieces, called *hnefi*, was bigger and more important than the rest. Eldjárn suggests that the sculpture represents the *hnefi* of the game. Because of the great resemblance a similar or like function may be postulated for the statuette from Eyrarland. Eldjárn dates the finds to the eleventh century.[3]

Eldjárn thus proposes a new view for the function of the artifact. He sees the clasped object of both forms as the beard, clenched and divided by the man. He does not explain, however, why this beard would end in three cuplike forms.

My examination of artifacts of archaic and medieval time (through their images in books) has led me to believe that the statuettes represent musicians, playing an instrument which shows close resemblance to a double flute. Let us consider some examples.

The statue of a goddess, said to be Cybele, is stationed in a niche of Büyükkale, the acropolis of Hattuša in Anatolia (Fig.4). She is flanked by dwarf musicians, one playing a double flute and the other a kithara. A band is tied above the lips around the head of the flute playing musician.

The playing of double flutes or pipes was indeed widely practiced in the ancient world, one of the pipes serving at times to accompany the melody or both pipes playing a tune. The earliest example dates to 2700 B.C. and was discovered in Ur.[4] Shaped of silver, it measures

---

[2] Eldjárn, 78.

[3] Eldjárn 81; he finds resemblance in the stylistic formation of the moustache in the bronze figure with stylizations employed repeatedly in the so-called Mammen style. Utensils decorated in this manner show a combination of two leaflike forms, one extending slightly downwards and the other coiled upwards, paralleling the pattern of the moustache.

[4] Marcuse, entry: double pipes. It is now in the Univeristy Museum of Philadelphia.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

FIGURE 4: Haas, Fig. 25; drawn by Hofstetter.

FIGURE 6: Becker, Fig. 27.

FIGURE 5: Becker, Fig. 21.

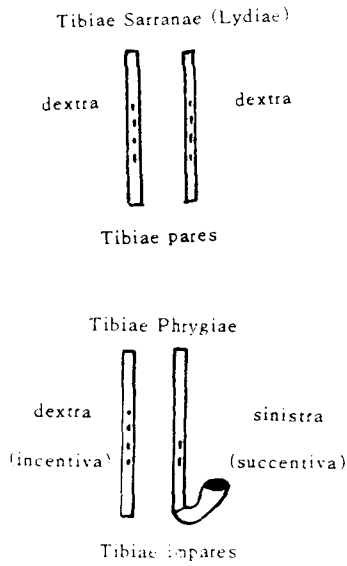

FIGURE 7: Becker, p. 149.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

about thirty centimeters in length. Around the middle of the second millennium the instrument was introduced into Egypt. The Egyptian *ma-t* consisted of reeds, about two feet in length, always used in pairs, and held loosely in the mouth.[5] Hebrew literature contains a wealth of references to reed pipes, single or double, called *hālîlîm*. The blowing of such pipes was frequent on ritual occasions. A Talmudic passage states that even the poorest of men would employ at least two *hālîlîm* at the funeral of his wife.[6] A Sumerian lament of Inanna for Dumuzi cites the 'reed pipe of dirges':[7]

> ...My heart plays the reed pipe of dirges, for him in the desert...where the lad dwelt...he who is captive...

It was not until 700 B.C. that pipe players appeared in Greek imagery. Pipes were probably introduced at this time from Asia Minor, and they were designated as *auloi elymoni* – Lydian pipes. Significantly a pipe playing god does not belong to the Greek pantheon. And Marsyas, who played the double pipe and who consoled the goddess Cybele in her sorrow with his tunes, was defeated by Apollo. Once it had entered Greece the *aulos* became the most important of wind instruments. It was carved of wood or at times of ivory. The two pipes were held together by a mouthpiece which could be detached. (Figs.5,6).[8] In Rome the instruments were designated as *tibiae Lydiae* or *tibiae Phrygiae* (Fig.7).

The custom persisted beyond the ancient era. A double pipe was excavated in Hungary from an Avar grave and dated to the eight century A.D.[9] From the thirteenth century onwards *flajos doubliers* were mentioned in French texts and the instruments were depicted in Italian paintings of the fourteenth century.[10] The tenth century Arab writer Al-Fārâbi speaks of the great popularity of the *deux flutes jumelées*

---

[5] Sachs, 98; they were cut of slender cane; the left reed sounded a lower drone.

[6] Bate, 57-58; Sachs, 119 citing *Ktubot* IV, 4.

[7] Jacobsen, 176, citing BE XXX nr.i,ii 3' to ii 4.

[8] Blume, entry: Griechenland B. III, Blasinstrumente; the connecting piece is called *zeugnos* – yoke; it does not show up in the images.

[9] Marcuse, entry: double pipes.

[10] Sachs 287; they are mentioned in *li contes des hiraus*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

FIGURE 8: Becker, Fig. 41.

FIGURE 10: Becker, Fig. 43.

FIGURE 9: Becker, Fig. 40; Scavi dei Museo archeologico di Caligari.

FIGURE 11: Becker, Fig. 54; Dresden.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

in his region.[11]

The *launedda* is still in use in Sardinia in modern times; it consists of three tubes of uneven length (Fig.8). An artifact of bronze, discovered in Sardinia, and dated to about 1000 B.C., indicates that in early times the flute had been double and the pipes had been of equal length (Fig.9). Sometimes a skinbag, serving as a bellows, was inserted between the mouthpiece and the terminal, and the device led in time to the development of the bagpipe, still played in our age. An instrument, possessing three uneven reeds, thus resembling the *launedda*, appeared also in medieval England, as shown by a miniature of the Codex of Canterbury of the twelfth century (Fig.10). The *dvojnice* of Yugoslavia, also still in use today, is carved of one piece of wood, containing two pipes of uneven length.

The power needed to blow the double pipe was great. The player was at times assisted by a leather band - Greek *phorbeia* -, tied around his head above his lips, as seen in Fig.4. This device helped to regulate the pressure in the cheeks so that they served as a kind of bellows.[12] As noted earlier, the pipes might be of equal or unequal length and might end in a bell-like cup. Such a cup is usually present in the Phrygian pipe (Fig.7) which is shown on a Roman sarcophagus of the third century A.D. (Fig.11).

If we return to the Icelandic artifacts after this cursory discussion, we find indeed close resemblance between the whalebone figure and the player of a double flute. It must be admitted, however, that the instrument does not clearly issue from the figure's mouth. We are also able to find parallels to this kind of musician in many aspects of the statuette from Eyrarland, especially in the position of the object which issues from the mouth, and in the splitting of the implement. We would be able to interpret the knoblike terminals as representations of the cuplike termination of some pipes. We might, in a more tenuous way, recognize the lower part of the moustache as a stylized version of the *phorbeia*, or as a crossbar which connects the tubes.

I have not seen, however, a triplication of the bell-shaped cup.

---

[11] Becker, 162, citing d'Erlangen, 137: Beaucoup jouent d'un instrument composé des deux flûtes jumelées que l'on dit accouplé ou marié.

[12] Sachs, 138; the Latin term is *capistrum*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Such multiplication would have to be attributed to stylistic playfulness. It is possible that the image of a bagpipe has exerted some influence on the sculptor. The following features, in contrast, find ample documentation: the position of the hands and the position of the instrument and its cleavage. We have no documentation at all of a hammer shaft split in the middle, on a hammer ending in three knobs, and held beneath the mouth. I have also not discovered a moustache which is divided into two parts, one turning upwards and the other downwards, or of a beard held and divided by its owner.

FIGURE 12: Eldjárn, fig. 7.

FIGURE 13: Breuil, 164.

While Kristján Eldjárn proposes a new view of the function of the sculpture I propose a new view of its occupation.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Interpreting the statuette from Eyrarland as a musician is supported by another Scandinavian find: the bronze figure of a seated man, discovered in Rällinge of Sweden (fig. 12).[13] Of the same style as the Icelandic artifact, he is naked and wears a cone-shaped hat on his head. In contrast, however, his phallus is emphasized and erect. Because of this feature the figure has been identified with the god Freyr, whose image in the temple of Uppsala was equipped with a 'huge phallus' according to Adam of Bremen.

The Swedish figurine, in turn, presses an object to its lips. This too appears to be a musical instrument and it is probably a flute. If this view is correct then we encounter here a phallic flutist, such as has already been encountered in this brief study, i.e., in the Sardinian *launedda* player and in the flute playing Satyr of Greece. We might have come across an iconographic tradition of the 'phallic flutist.' This tradition would be very ancient indeed, for a phallic flutist was engraved, many millennia ago, into the wall of a paleolithic cave in southern France (Fig. 13).

References

Al Fārābi
Grand traité de la musique, in d'Erlanger.
Bate, Philipp
1969 The Flute. London.
BE - The Babylonian Expedition of the University of Pennsylvania. Series A. Cuneiform Texts. 1896-. Philadelphia.
Becker, Heinz
1966 Zur Entwicklungsgeschichte der antiken und mittelalterlichen Rohrblattinstrumente. Hamburg.
Blume, Friedrich, ed.
1956 Musik in Geschichte und Gegenwart. Kassel.
Breuil, H. Abbé
1952 *Four Hundred Centuries of Cave Art.* Dordogne.
Dronke, Ursula, et al. eds.
1981 Speculum Norroenum. In Memory of Gabriel Turville-Petre. London.
Eldjárn, Kristján

[13] Eldjárn, 81.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Eldjárn, Kristján
1981 "The Bronze Image from Eyrarland" in Dronke: 73-84.
d'Erlanger, Baron, R.
1930 La musique arabe I. Paris.
Haas, Volkert
1982 Hethitische Berggötter und hurritische Stein-dämonen; Riten, Mythen, Kulte. Mainz.
Jacobsen, Thorkild
1976 Treasures of Darkness. New Haven.
Marcuse, Sibyl
1966 Musical Instruments: A Comprehensive Dictionary. London.
Sachs, Curt
1942 The History of Musical Instruments. London.

Linguistics & Language Behavior Abstracts

LLBA

Now entering our 24th year (135,000 abstracts to date) of service to linguists and language researchers worldwide. LLBA is available in print and also on-line from BRS and Dialog.

Linguistics & Language Behavior Abstracts

P.O. Box 22206
San Diego, CA 92192-0206
Phone (619) 695-8803 FAX (619) 695-0416

Fast, economical document delivery available.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Cláen Temair: Sloping Tara

William Sayers
University of Victoria

Under the title "Aodh Eanghach and the Irish King-Hero", Breandán Ó Buachalla, in the recent James Carney *festschrift,* has traced the extraordinarily vital image of the redeemer king in Irish literature of the 13th to 17th centuries.[1] *Aodh* is one traditional kingly name among many; the adjective *eanghach* is tentatively translated by Ó Buachalla as "truthful". Chief media in which this image is deployed are the inauguration ode, panegyric and prophecy. The thematics are the restoration of legitimate rule in Ireland and the concurrent expulsion of the English usurper. In reviewing the extensive corpus of poetry related to the rulership, rule and misrule, Ó Buachalla identifies a number of motifs entwined in this stout and unbroken red thread of Irish political ideology. One relates to the well known story of the accession of Cormac to the kingship at Tara.

As Tomás Ó Cathasaigh has shown, this is one of a number of interlocking variations on the theme of *lommrad* or "shearing" in the tales associated with the Battle of Mag Mucrama, and the kings Lugaid Mac Con, Ailill and Cormac.[2] A sheep has strayed onto the queen's garden where a plant used for dying, perhaps woad, was growing, and has stripped the plot of its crop. As grazing animals on another's land was a symbolic means of laying a claim, this action, however unintentional, can be seen as an implicit questioning of royal authority. King Lugaid is called on to pronounce judgment in this case of animal trespass.[3] He judges that fair recompense would be the dead body of

---

[1] Breandán Ó Buachalla, "Aodh Eanghach and the Irish King-Hero", *Sages, Saints and Storytellers: Celtic Studies in Honour of Professor James Carney*, eds. Donnchadh Ó Corráin, Liam Breatnach and Kim McCone (Maynooth: An Sagart, 1989), pp. 200-32.

[2] Tomás Ó Cathasaigh, "The Theme of *lommrad* in *Cath Maige Mucrama*," *Éigse* 18 (1981), 183-209.

[3] See the discussion of animal trespass in Fergus Kelly, *A Guide to Early Irish Law*, Early

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the sheep. But the lad Cormac, who has been taken in by Lugaid for fostering, has a better grasp of the metonymical and homological relationships that seem to have informed so much of early thought. After saying that the king had never before pronounced a false judgment, he goes on to prescribe the shorn fleece of the sheep, not its carcass, as the appropriate fine, the logic being that the fleece is to the sheep as the plant to the plot. Other strands of the tale point up similar analogies, homologies and relationships of whole and part, of doublets and other equivalences, e.g., the stewardship of the land and its expropriation, a musician and his music, a king and his jester, a mother's authority to state the paternity of her child, mice served as meat, double namesakes. Lugaid recognizes his error and, indeed, the very kingdom does as well, as crops fail, stock is barren, and the indices of the Wasteland appear in succession. It is evident to all that Lugaid's kingship is no longer legitimate, that the goddess of territorial sovereignty has withdrawn her favor, and that the kingship must be renewed. In one sense the very fact that the grazing of the garden could occur at all, if we see the queen as a proxy for the goddess, suggests that the kingdom was already at risk. Eventually Lugaid is deposed and Cormac crowned king, but not before one side of the royal fortress at Tara has collapsed as a consequence of the unjust judgment. Cormac, the embodiment of courage, wisdom and justice, accedes to the kingship and the bountiful kingdom is restored.[4]

Traditional Irish topographical lore associated one of the megalithic earthworks on the Hill of Tara, noteworthy for its steep side on the west, with the ruined royal hall, just as the remains of other tumuli and trenches at the site are linked, through the association of altitude and rectitude, and the concept of the hilltop as contact point with the divine, to other tales of legendary kings at Tara. Tara was continuously seen as both metonym for and microcosm of all Ireland, whether or not an effective highkingship, seated at Tara, was operative or merely an elusive political goal. Ó Buachalla comments in a note on the *cláen*

Irish Law Series 3 (Dublin: Dublin Institute for Advanced Studies, 1988), p. 143.

[4] See the full discussion in Tomás Ó Cathasaigh, *The Heroic Biography of Cormac mac Airt* (Dublin: Dublin Institute for Advanced Studies, 1977), complemented by Ó Buachalla, pp. 211-14.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Temair "sloping" or "slanted Tara" motif as follows: "The significance of this and other similar metaphors in the material must reside in the origin of *claon*. As this came about by Mac Con's false judgment ... perhaps the implication is that by righteous rule Aodh Eanghach will straighten the incline and restore Tara to its former state. A less literal interpretation could, however, be applied; Aodh Eanghach will rid Tara of iniquity" (226f.). The purpose of this study is to expand on this observation, adduce additional evidence, and suggest that the persistence of the motif justifies a ranking secondary but closely complementary to that of the kingly deliverer.

A sense of the referential system in which "sloping Tara" occurs can be gained from a number of excerpts from the evidence collected by Ó Buachalla in his tracking of the Aodh Eanghach theme. Typical is *beanfaidh claon a tulaigh Teamhrach* "he will remove the slope from the hill of Tara" and we note that the characteristic of the hillside, its slanting or sloped quality, has here been nominalized, as in in *ráith Teamhrach cuir as a claon* "rid the mound of Tara of its slope" (211). It is then legitimate to question, as Ó Buachalla has done, whether some abstract ethical quality might not be intended. More incidental but still resonating use of the concept is found in such expressions as *fá mhúr claoinTeamhrach* "round the ramparts [actually sod-covered earthworks] of sloping Tara" (200), an elegiac tag that rises above the status of filler. An allusive utilization of the slope motif may be intended in the frequent references to the side of Tara (*taobh Teamhrach*) at which the *Lia Fáil* or "stone of destiny" was located, the flagstone playing a central part in the identification of a rightful claimant to the throne (209).[5] To note other instances than those available in Ó Buachalla's richly documented overview, figurative use, albeit still with a tie to Tara, is

[5] See Tomás Ó Broin, "*Lia Fáil*: Fact and Fiction in the Tradition", *Celtica* 21 (1990), 393-401; he convincingly links the flagstone on which the king stands to the sovereignty goddess. The association of the lower body with the sexual dimension of acccession to the rulership, examined later in this article, is consonant with this identification. But as this is the "stone of Fál", it is legitimate to continue to inquire whether *Fál* does not have a masculine identity, perhaps originally symbolizing the successful male candidate for the kingship. As well as the earlier explored phallic associations, note the Old Norse *vǫlsi* "horse phallus" and its importance for the kingship. See, too, the recent study of Yolande de Pontfarcy, "Two Late Inaugurations of Irish Kings", *Études Celtiques* 24 (1987), 203-08.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

seen in the lines *tuccus cath, gér chláon céille \ do fhlaith Temhra táobhréidhe* "I gave battle, though it was a perversity of judgment, to the lord of smooth-sided Tara".[6] The play of ideas here is the iniquity, if we may so inflate *cláen* from "slant", in an attack on the king of Tara, whose hillside is already "smooth-sided" from equivalent misdeeds in the past. *DIL*, wrongly I suggest, weakens the association with the limp and deflated translation "a departure from good sense".

The deployment of the concept in a religious context is illustrated when a poet prays for God's guidance "lest I ponder wretchedly the desire of any iniquity" (*nár scrútar co trúaige \ dúthracht nacha claíne*).[7] The Christian religion is said to have been brought to the Irish *dia scarad fri clóen fri col* "to sever them from iniquity and sin".[8] Nor is the tie of "slant" and "sloping" to justice neglected. In the glosses on the Psalms the Scripture's *corrupta iudicia* is glossed with the gen. pl. *innambritheman cloin* – "crooked judges" we might say today.[9] Similarly we have *cláenbhreth* "biased judgment".[10] In a more tendentious ecclesiastical assumption of an entire episode, the prologue of *Senchus Mór* attributes the crooked trenches at Tara to Patrick's curse when his charioteer was killed.[11]

In approaching the *cláen* concept for a closer look, it must be borne in mind that the currency of the term need not derive from the Lugaid/Cormac legend. Rather, a basic concept, a pre-existent spatial metaphor, could be embodied in the tale in real physical terms, when the walls collapsed on the hillside, assisted by the visual property, to

---

[6] Osborn Bergin, "A Dialogue between Donnchad son of Brian and mac Coisse," *Ériu* 9 (1921), 175-80, at 178, par. 11.

[7] Gerald Murphy, ed. and trans., *Early Irish Lyrics* (Oxford: Clarendon, 1962), No. 24, st. 5.

[8] Edward Gwynn, ed. and trans., *The Metrical Dindshenchas*, Todd Lecture Series, vols 8-12 (Dublin: Hodges, Figgis, 1906-35), II.14.72.

[9] John Strachan and Whitley Stokes, eds and trans *Thesaurus Palaeohibernicus*, 2 vols (Cambridge: Cambridge University Press, 1901-03), Milan $103^{b}17$.

[10] *Ancient Laws of Ireland*, 6 vols (Dublin, 1865-1901), I.24.13, Comm; *cloenbrethach* "O'Davoren's Glossary", ed. and trans. Whitley Stokes, *Arkiv für celtische Lexikographie* 2 (1904-07), 690, cf. 467.

[11] See the discussion in John Carey, "The Two Laws in Dubthach's Judgment", *Cambridge Medieval Celtic Studies* 19 (1990), 1-18, at 2.; *Laws* I.6.24, now accessible in *Corpus Iuris Hibernici*, ed. D. A. Binchy, 6 vols (Dublin: DIAS, 1978), II.340.6f.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

use theatrical terms, of the appropriately contoured earthwork on Tara Hill. OIr. *cláen* is cognate with the Latin root that continues in the *-cline* of English *decline, incline* (obsolete verb *clino* from Gk. *κλῑνω*, whence *clinatus*; cf. Gothic *hlains* 'hill', Lith. *šlaĩtas* 'slope'; < I-E **klei-*). From the basic sense of 'sloped', 'slanted', 'inclined', 'perverse' but also 'crooked', *cláen* reaches into representational fields with meanings such as 'curly' for hair, 'squinting' for eyes (e.g., the blinding by a bee-sting of King Congal, thenceforth called Congal Cáech, but also Cláen), 'wry' for a neck (the hero Conall Cernach), etc., and into abstract moral fields with meanings earlier seen: 'unjust', 'wicked', 'iniquitous'.[12] Interestingly, the term is used of faults of poetic metre.[13] As a noun we find it also encompassing such notions as obliquity, deception, error, and injustice. The currency of the basic image is also evident in English idiom: slanted, biased, bent, warped, crooked as opposed to straight, and, more importantly, true, as in the true line of a plummet.[14]

The association of justice and the true line had striking Biblical antecedents that would legitimate its use in medieval Christian Ireland. In Amos 7.7-8 we read "And the Lord said unto me, Amos, what seest thou? and I said, a plumb line. Then said the Lord, Behold, I will set a plumb line in the midst of my people, Israel; I will not again pass them by any more", i.e., let them elude justice. And in Isaiah 28.17: "Justice also will I lay to the line, and righteousness to the plummet;

---

[12] The Congal anecdote is discussed in Thomas Charles-Edwards and Fergus Kelly, *Bechbretha*, Early Irish Law Series 1 (Dublin: DIAS, 1983), 123ff., and the mention of the alternative epithet *cláen* is found in *The Annals of the Four Masters*, ed. and trans. John O'Donovan, 7 vols (Dublin: Hodges, Figgis, 1848-54, repr. New York: AMS, 1966), I.192, and in *The Banquet of Dun na nGedh and the Battle of Mag Rath*, ed. and trans. John O'Donovan (Dublin: Irish Archaeological Society, 1842), p. 34. The attributes of Cornall Cernach are examined in William Sayers, "*Cerrce*, an Archaic Epithet of the Dagda, Cernnunos, and Conall Cernach", *The Journal of Indo-European Studies* 16 (1988), 341-64. One of the *gessa* or taboos of King Conaire is to hunt *claenmila Cerna* 'the crooked animals of Cerna (= Crook)'; *Togail Bruidne Da Derga*, ed. Eleanor Knott, Mediaeval and Modern Irish Series 8 (Dublin: Dublin Institute for Advanced Studies, 1936), l. 173 and note.

[13] References in *Dictionary of the Irish Language*, gen. ed. E. G. Quin (Dublin: Royal Irish Academy, 1913-76), s.v.v. *cláen, claíne*.

[14] On plumb lines whose darkened threads were slapped on masonry under construction to leave a true line, see Pierre-Yves Lambert, "Old Irish *gláosnáthe 'linea, norma'*", *Celtica* 21 (1990), 234-39; note, too, OIr. *gabulsreng* 'plumb line', *DIL s.v.*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and the hail shall sweep away the refuge of lies, and the waters shall overflow the hiding place." Even more telling is Lamentations 2.8: "The Lord hath proposed to destroy the wall of the daughter of Zion; he hath stretched out a line, he hath not withdrawn his hand from destroying; therefore he made the wall and rampart to lament; they languished together." What is striking here is not the prior occurrence of a readily conceived artisanal metaphor but its association with supreme authority, not the justice of the Irish king, but the vengeance of the Old Testament Yahweh. Clearly, the legal and monarchical concepts of medieval Irish texts do not derive solely from pagan Celtic antecedents.

The antonymic expression to *cláenbhretha* was *fírbhretha* or *bretha fír* "judgments of truth" or "just judgments". Irish *fír*, cognate with Lat. *verus*, was the positively charged and thus even more prominent concept in early Ireland, it too integrally associated with the kingship. This term has been the objective of extensive scholarly comment and its associational ties with *síd*, at once both "peace" and "otherworld site", often a mound, have been well established.[15] As Lóeg reports to Cú Chulainn after his visit to the Otherworld kingdom of Lugaid: *Atchonnarc tír sorcha sáer \ inná ráiter gó ná clóen* "I saw a bright and noble land where neither lie nor falsehood is spoken".[16] *Fír* stood in direct and sharp opposition to *gó* 'iniquity, wickedness', paired with *cláen* in this last citation, and a term which also figures prominently in Irish king literature (see *infra*).

Attention must now be turned to the epithet *eanghach*, Ó Buachalla's "truthful". He rightly dismisses a derivation from *eng* 'strip, patch' and is justifiably dubious about the interpretation 'foretold', i.e., the prophesied hero (229). The native Irish glossators of the Middle Ages related the word to *gúach* 'deceitful' and saw it especially relevant to speech acts, including judgments.[17] In this reading the *ean-* or *an-*

---

[15] Heinrich Wagner, "Studies in the Origins of Early Celtic Civilization. I. Old Irish *fír* 'truth, oath'", in *Studies in the Origins of the Celts and of Early Irish Civilization* (Belfast and Tübingen: Niemeyer, 1971); Tomás Ó Cathasaigh, "The Semantics of *Síd*," *Éigse* 14 (1971-72), 137-55.

[16] David Greene, ed., *Serglige Con Culainn*, Mediaeval and Modern Irish Series 14 (Dublin: DIAS, 1953), ll. 541f.

[17] E.g., *breithemain goacha*, "The Adventures of St. Columba's Clerics", ed. and trans.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

must be seen as the negative particle, and thus negating deceit – a double negation, as it were – becomes stating the truth. *Gúach* derives from the above noted term for 'falsehood, iniquity' *gó, gáu*. The relevance of *gó* for the present discussion is illustrated in a brief account of the Lugaid/Cormac story given in a topographical and toponymical text on Tara: *Issin Clænfertai tuaiscertaig ruc Lugaid in ngúbreith isin glaisin do orgain dona cáirchib* "In the northern Sloping Trenches Lugaid passed the erroneous judgment regarding the woad destroyed by the sheep".[18] Wisdom literature reflects the same causal link between *gó* and the blighted kingdom that we have seen in the story of Lugaid and Cormac. In one recension of *Audacht Morainn* (*The Testament of Morann*) we find: *Ar is gó flatha do.ber sína saíba for túatha clóena, co.secca talman torad* "For the false conduct of the ruler brings false weather on iniquitous peoples, for the fruits of the earth wither (or freeze)".[19] In another recension we find: *To-leci gó do fír* "falsehood yields to truth", and, illustrating the close tie of justice to material prosperity: *Ar atáat a deich ara-báidet goí cach flathemon ... flaith 7 febas, cluith 7 coscar, cland 7 cenél, síd 7 sáegul, toceth 7 tótha* "There are ten things which extinguish the injustice of every ruler ... rule and worth, fame and victory, progeny and kindred, peace and long life, good fortune and tribes (?)".[20]

With regard to etymology, serious reservations must be voiced over Wagner's association (40) of *gó* with *cacc* "excrement", despite the latter's idiomatic tie to concepts of honour. Thurneysen traced it to a

---

Whitley Stokes, *Revue Celtique* 26 (1905), 130-70, at 156, par. 40.

[18] Whitley Stokes, ed. and trans., "Temair" in "The Prose Tales in the Rennes Dindshenchas", *Revue Celtique* 15 (1894), 272-336, at 283, par. 35. Ó Buachalla (227, n. 17) calls attention to the phrasing *gúbrethaib 7 anúabar Meic Con* "on account of the false judgments and the arrogance of Mac Con", in Myles Dillon, "The Death of Mac Con", *PMLA* 60 (1945), 340-45, at 341. Another tag from a poem on the Tara site speaks of *cláenferta ná cláenchaingne* "the crooked trenches of the crooked dealings"; "Temair III", *Metr. Dind.*, I.16, l. 42.

[19] Rudolf Thurneysen, ed. and trans., "Morands Fürstenspiegel", *Zeitschrift für celtische Philologie* 11 (1916), 82, par. 25.

[20] *Audacht Morainn*, ed. and trans. Fergus Kelly (Dublin: DIAS, 1976), par. 54, l. 130, par. 56, ll. 136ff. Note, too, the work *Gúbretha Caratniad*, ed. and trans. by Rudolf Thurneysen as "Die falsche Urteilsprüche Caratnia's," in "Aus dem irischen Recht III, Nr. 4", *ZCP* 15 (1925), 302-70, dealing with exceptional cases; text now available in *CIH*, 2192-99.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

common Celtic **gāwā*, and Pokorny went a step further, tentatively identifying an Indo-European root **ghaṷo* with the meaning "false, untrue". Mann sees an I-E root **gaus-, gau-* "twist, crookedness, falsity", the origin not only of Irish *gó* but of Greek *αγαvός* "guileless" = "noble", a close match to Ir. *eanghach*. The ultimate source of OIr. *gó* may lie with the prolific I-E root **gēu, gu* "bend, twist, arch".[21] If this etymology could be sustained, we would then have in *gó* the same kind of spatial metaphor as we have seen in *cláen* "sloping". And if Irish *fír* and Latin *verus* are to be traced to an I-E root meaning "bind", as Pokorny would have it, the true is that which is bound, fixed in place, the false that which has slipped from place and lost alignment. Aodh Eanghach would then be the restorer of the true in its double sense of rectilinearity and veracious utterance, just as Cormac had concretely restored the fallen fortress.[22] Paralleling *fír* and *gó*, with their antonyms incorporating the negating particle *an-*, even the supposedly near-perfect king, Cormac, could in one anecdote be accused of an act of *anfhír*.[23]

Before turning to the spread of the *cláen* motif, both laterally in geographical terms and forward in temporal terms, we may cite

---

[21] Rudolf Thurneysen, *A Grammar of Old Irish* (Dublin: DIAS, 1946), 43; Julius Pokorny, *Indogermanisches etymologisches Wörterbuch*, 2 vols (Bern: Francke, 1959-69), 404; Stuart E. Mann, *An Indo-European Comparative Dictionary* (Hamburg: Helmut Buske, 1984-87); cf. Jan de Vries, *Altnordisches etymologisches Wörterbuch*, rev. ed. (Leiden: Brill, 1962), s.v. *kot*, where the root is identified as **geu, gu*. See *DIL* for a brief discussion of the problematic interjection *angó* "truly, indeed".

[22] Mary Hayden, "The Songs of Buchet's House", *ZCP* 8 (1912), 261-73, at 264. Other Irish terms from this associational field that might be explored include *camb* "crooked, wry" (Thurneysen, *GOI*, 118, Pokorny, *IEW*, 525; cf. Goth. *hamfs* "maimed"), *cil* "biased" (O'Davoren's Glossary, No. 467; *iar cilbhrethaib* "after biased judgments", "Din Techtugad", Kelly, *GEIL*, 358), *cromm* "bent, stooped, crooked" (possibly the name of a pagan divinity, *Metr. Dinds.* IV.18.3; see the discussion of physical disfiguration *infra*), and *díriuch* "straight". On the more ethical than judicial notion of truth, see Philip O'Leary, "*Fír fer*: An Internalized Ethical Concept in Early Irish Literature", *Éigse* 22 (1987), 1-14. The combination of qualitative and quantitative that is reflected in the concept of the true also seems to underlie the use of the verb *ad-mestar* "let him [the ruler] estimate, measure" in gnomological literature, e.g. *Audacht Morainn*, ed. Kelly, pars 32-52, discussion at 42.

[23] James Carney, "A Lament for Lugna Fer Trí" in "A Miscellany of Irish Verse", *Éigse* 1 (1939-40), 239-43, at 239; discussion in Ó Buachalla, 227, n. 17. Cf. the noun *anflaith* contrasted to *fírflaith*; *Audacht Morainn*, ed. Kelly, par. 54, l. 128; cf. Eng. *warlock* < AS *wærloga* 'truth liar'.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

another example from the early Irish texts of restorations, setting to rights. This will begin with a consideration of the flawed hero and the disfigured king. In the former case it is not the tragic flaw of the dramatic hero, but a rather curious physical defect characteristic of the Irish epic hero, as distinct from hero-king. Early in the tale *Serglige Con Culainn* (*The Wasting Sickness of Cú Chulainn*, par. 5), attention is called to three minor deficiencies which the heroes Cú Chulainn, Conall Cernach and Lóegaire Búadach exhibit, none, however, serious enough to impede their heroic activity. Indeed, the flaws are almost considered beauty marks, since the women of Ulster sought to copy them. In this context, Cú Chulainn is described as squint-eyed, and in other texts there is explicit play on the words *cú* 'hound' and *cúa* 'squint-eyed'.[24] Lóegaire is ascribed a stammer, and Conall is called *cláen*, a reference to the wry neck he suffered as an infant when trampled by a senior warrior. Cú Chulainn is often described as undergoing a fury-generated, terrifying physical distortion prior to battle, the effects of which include enlargement of one eye and the retraction of the other into his head. The squint may be a kind of permanent reminder of this transformational ability, but equivalent resonances for the other two defects are more difficult to detect.[25]

Early Irish tradition is rich in examples of bodily parts sacrificed or exchanged in return for specialized knowledge or privilege, usually obtained from some representative of the Otherworld. Finn mac Cumhaill's precocious baldness and burned thumb can be compared with Norse Óðinn's surrender of an eye for wisdom and Týr's loss of a hand in the effort to bind the Fenris Wolf. With the lexical economy of French, Georges Dumézil identified the latter two archetypes as *le borgne* and *le manchot*, the one-eyed and one-handed ones. I contend that the paradigm must be completed by a *châtré* or *estropié*, the

[24] *Dáig cúa ainm na claéne isin tsengaidilc, Táin Bó Cúailnge: Recension I*, ed. and trans. Cecille O'Rahilly (Dublin: DIAS, 1976), l. 3011.

[25] *TBC: Rec. I* also has Cú Chulainn state of the deer that he captures in the *Macgnímrada*: *Tongu-sa do dia toingte Ulaid, clóenad clóenfat-sa mo chend fair nó in tsúil dogén-sa fris, nocon focher cor día chind riut 7 noco lémaither a glúasacht* (ll. 794ff.) The double *figura etymologica* is noteworthy. O'Rahilly translates: "I swear by the god by whom the Ulstermen swear, that I shall so nod at him and so glare at him that he will not move his head towards you and will not dare to stir", but a better rendering might be "lower my head and glower".

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

castrated or crippled one, as exemplified in the thigh-wounded Fisher King of Arthurian romance, and other sexually dysfunctional figures such as the aged king Gúaire, analyzed with great profit by Jean-Michel Picard in the Carney *festschrift*.[26] In the case of royal destinies, such disfigurations are typically the result of misrule. Judging from the combined evidence of the Indo-European heritage, failure to maintain sacral observances or justice, cowardice in battle, economic or other extortion of the people, any or all of these could lead to typologically appropriate punishment, fatal or disfiguring. By typologically appropriate is meant that sins against justice or cult (in the person of the early Irish saints) tend to result in head-related disfiguration (scalping, blinding, facial rictus, a facial scratch from an opponent's poisonous tooth, perhaps the thirst imposed on Conaire's severed head in *Togail Bruidne Da Derga - The Destruction of Da Derga's Hostel*), martial failure in wounds to the upper torso and arms, sins in the sphere of material wellbeing, sexuality and procreation, in impotence or symbolically leg-related wounds, the knee being a widespread metaphor for the reproductive organs. Comment on the classic nexus of such sins of misrule and their penalty, the threefold death of the king, follows below.

Just as the failed king is made less than whole through such disfiguration, so the blemished king is unfit to rule. In fact, scalping or forced tonsure continued to be practised in Ireland after the Anglo-Norman invasion as a means of eliminating political rivals to the kingship.[27] Thus the earlier homology "woad is to land as fleece is to sheep" can be extended to encompass the equations "as hair is to the

---

[26] Jean-Michel Picard, "The Strange Death of Gúaire mac Áedáin," in *Saints, Scholars and Story-tellers: Celtic Studies in Honour of James Carney*, pp. 367-75. To the examples cited by Picard, with their marine environments and hand tools (in lieu of weapons), may be added this brief characterization from the Welsh tale *Culhwch ac Olwen*, which displays a wealth of traditional motifs, not always seriously deployed: "Teithi Hen the ancient son of Gwynnan, whose kingdom the sea inundated; he barely escaped and came to Arthur. From the time he came here, his knife had this peculiarity: no haft would ever remain on it. Because of that he became sick and enfeebled while he was alive, and then died of it"; *Culhwch and Olwen* in *The Mabinogi and Other Medieval Welsh Tales*, ed. and trans. Patrick K. Ford (Berkeley: University of California Press, 1977), p.128. Welsh text in *Culhwch ac Olwen*, eds Rachel Bromwich and D. Simon Evans (Caerdydd: Gwasg Prifysgol Cymru, 1988), ll. 245-52.

[27] Edward James, "Bede and the Tonsure Question", *Peritia* 3 (1984), 85-98, at 89.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

king" and, on a more abstract level, "as the fertility of the kingdom is to just rule and the goddess's favor.[28] Here we have an equilibrated paradigm that we can appreciate in almost architectural terms, with the balance among functional slots perhaps not too distant from the ideas of rectitude and the true. The deployment of the paradigm, the syntagmatic realization, moving from *langue* to *parole* as it were, involves other less static relationships, diachronic as opposed to synchronic: the sheep eats the woad and the woad can dye the fleece; Cormac recognizes the natural cyclicity of the regrowing woad and fleece, a cyclicity in which the kingship too is renewed.

To return now to the three flawed heroes, with their squint, stoop and stammer (the Irish run is *cluíne 7 minde 7 guille* "crookedness, stammering, blindness of one eye"; *Serglige Con Culainn*, par. 5), the tentative conclusion may be advanced that these minor defects, all seated in the head, are intended to identify and in a sense maintain the three as true warrior heroes, none of whom will accede to the kingship. *Mesca Ulad* actually has Cú Chualinn surrendering a small kingdom to Conchobar.[29] This, then, would be the way the Irish tradition effected the reconciliation between the king and the hero, a richly agonistic relationship in other medieval traditions. Heroic prowess in the Ulster cycle is generally in pursuit of royal policy, however vaguely defined, although many adventures can also be seen

[28] The hair:vegetation homology had currency outside Ireland and may be traced to the Indo-European heritage. See, for example, the episode in Gregory of Tours' account of Chararic and his son who were tonsured by Clovis. The father weeps, but the son cries out: "These leaves have been cut from wood which is still green and not lacking in sap. They will soon grow again and be larger than ever; and may the man who has done this deed perish equally quickly" (*Libri historiarum*, II.41; cited from James, 91). Interestingly, the motif of a biased judgment occurs in another instance of homological extension (or "analogy" *cosmailius*), when a book and its copy are compared, for purposes of determining ownership of the latter, to a cow and its calf. The saints Fintan, the book owner, and Columba, the copyist, had referred the question to the king Diarmait; Keating calls his ruling a *claoinbhreith*; discussion in Kelly, 239.

[29] In one episode of the *Lebor Gabála Érenn* (*Book of the Takings of Ireland*), the Lia Fáil refuses to cry out under Cú Chulainn, as it normally would in the presence of a legitimate candidate to the kingship; *Lebor Gabála Érenn*, ed. and trans. R. A. S. Macalister, Irish Texts Society 34, 35, 39, 41, 44 (Dublin: ITS, 1938-56), par 309.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

as examples of heroic self-realization.[30] Finn represents a different strand of the tradition, living off the countryside, far from court, and chiefly occupied in repelling external invaders.

Why did only one side of the walls at Tara collapse? The OIr. term *leth* has the general meaning of "side". In such an expression as *lethbhreth* it means a "partial or prejudiced judgment",[31] which is thus a near doublet of the earlier met *cláenbhreith*. But *leth* is also frequent in compounds dealing with pairs, e.g., *lethshuil, lethlám* "one-eyed", "one-handed". Irish literature is replete with characters thus disfigured or so born, or figures imitating such status by closing one eye, standing on one foot, and speaking a charm into one closed fist in one breath.[32] As the oblique line is half way between the vertical and the horizontal, and the notions of "side" and "slope" were allied, so *cláen* seems to have become linked to *leth-*, and the association of the latter with the reduction from the binary to the singular to have influenced the Tara story, where the fortress, like the disfigured person, is afflicted on one side only. The human construct, the fortress, must be seen as a symbol of social order, threatened by the destructive, invading forces of chaos, the negative side of the Otherworld, when the king fails to rule justly.[33]

---

[30] For the ways in which traditional narrative could be shaped in support of dynastic interests, see, for example, Joan N. Radner, "'Fury Destroys the World': Historical Strategy in Ireland's Ulster Cycle", *Mankind Quarterly* 23 (1982), 41-60, and Maria Tymoczko, "Translating the Old Irish Epic *Táin Bó Cúailnge*: Political Aspects", *Pacific Quarterly* (Moana) 8 (1983), 6-21.

[31] Máirín Ní Dhonnchada, "An Address to a Student of Law", in *Saints, Scholars and Storytellers: Celtic Studies in Honour of James Carney*, 159-77 at 167, st. 23.

[32] See, for example, *Bruiden Da Choca*, ed. and trans. Whitley Stokes as *Da Choca's Hostel*, *Revue Celtique* 21 (1900), 149-65, 312-27, 388-402, at 314; Christian J. Guyonvarc'h, "Notes d'étymologie gauloises et celtiques, No. 82, Moyen-irl. *corrguinech* 'magicien' et *glam dícinn* 'malédiction suprême'", *Ogam* 16 (1964), 441-46; 17 (1965), 143-44. More recent discussion of *corrguinech* in *Uraichecht na Ríar*, ed. and trans. Liam Breatnach, Early Irish Law Series 2 (Dublin: DIAS, 1987), 140, and Joseph Falaky Nagy, "The Herons of Druim Ceat Revisiting, and Revisited", *Celtica* 21 (1990), 368-76.

[33] Also allied to this tradition is the story of Cormac's cup that broke into three pieces in the presence of falsehood, but was reconstituted when the truth was told; "The Irish Ordeals, Cormac's Adventure in the Land of Promise and the Decision as to Cormac's Sword", ed. and trans. Whitley Stokes, in *Irische Texte* 3, Ser. 1 (Leipzig, 1891), 185-229; Daniel Dubuisson, "Les talismans du roi Cormac et les trois fonctions", *Revue Historique* 508 (1973), 289-94. Perhaps the characteristic of the chariot tilting up before an unqualified candidate to the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Fled Bricrend (*The Feast of Bricriu*) is ostensibly about the contention among the Ulster heroes for the Champion's Portion. Cú Chulainn, Conall Cernach and Lóegaire Búadach face a number of trials of courage and martial ability, the best known of which is the mutual beheading scene, which appears to have served as a fairly direct antecedent for the similar scene in the Middle English *Sir Gawain and the Green Knight*. The malicious, venom-tongued Bricriu has a palace built in emulation of the royal fortress at Tara, in order to invite King Conchobar and his heroes to a banquet and provoke them to dissension. As the diners assemble, Cú Chulainn lifts the side of the building in order to allow his wife easy access and the opportunity to claim the seat of eminence. The building when let down sits crookedly and the upper-level bower, from which Bricriu hoped to spy, collapses, hurling him and his wife into the mud. The eloquent mediator Sencha states that he who made the house lop-sided should set it straight, and we find the expected term *cláen* along with *díriuch* "straight".[34] On the symbolic level, Cú Chulainn has exposed the false foundation on which the banquet hall was built, just as Lugaid's fortress fell as a consequence of the false judgment.[35]

There is another motif in Irish literature, allied with that of the true line, that has been insufficiently recognized, one that can be identified with verticality and aerial movement. The canonical Irish expression of the threefold death of the deficient ruler is by "wounding and burning and drowning". Evidence from cognate cultures drawing on the Indo-European heritage, however, suggests a triad of 1) hanging or falling, 2) wounding or burning, and 3) drowning or interment. This in turn reflects a tripartite conception of the cosmos as composed of sky, earth's surface, and the sea and underearth, and,

---

kingship of Tara is also to be referred to these concepts of obliquity; Lucius Gwynn, "De Sil Chonairi Mór", *Ériu* 6 (1912), 130-42.

[34] *Fled Bricrend* in *Lebor na hUidre: The Book of the Dun Cow*, eds Richard I. Best and Osborn J. Bergin (Dublin: Hodges, Figgis, 1929), ll. 8385ff.

[35] *Cláen* is also used of the irregular line drawn by Tephi with a brooch to set out the outer walls of the fortress at Emain; *Sanas Cormaic: An Old Irish Glossary*, ed. Kuno Meyer, *Anecdota from Irish Manuscripts* 4 (Halle, 1912), s.v. Emain, and *Metr. Dinds.* I.6. In etymologizing Temair as the name of an early princess *Tea* + *múr* "rampart", the deliminating function of the wall, at the border between the natural and the social world, is stressed; "The Prose Tales in the Rennes Dindsenchas", *RC* 15 (1894), 277f.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

at the microcosmic level, of the human body as composed of head, torso and arms, lower body and legs. As the common Irish term for "hanging" would have been *crochad* and this term came to be preferentially used of the Crucifixion, it appears that a degree of functional displacement has occurred on the lexical and ideological levels, so that the aerial, vertical and sky-related death was reserved for exclusive Christian use, and the two members of the second category, wounding and burning, were given discrete status.[36] Some traces, however, remain of the earlier pagan paradigm: Suibhne's avian existence and various falls to earth, and Muirchertach mac Erca's dream of falling from a griffin's nest. This royal death includes the detail of a falling ridgepole in a fortress whose name *Cletech* was (falsely) etymologized as "roof of groans". Interestingly, *cléthe* "ridgepole" is traceable to the same I-E root, **klei-*, as *cláen*. Thus the "aerial" punishment for the sin of injustice could take the alloforms of the fall of a king's body, of the ridgepole, or of the fortress wall.

The triple death is incurred as Muirchertach passes through the doorway of his hall.[37] Doorways, like fords in Irish tradition, are archetypical liminal sites marking a passage from one mode of existence to another, especially from the ordered, hierarchical social world of the banquet hall to what was for early man a more contingent natural world. The frequent mention of door posts at fatal moments, which may include the appearance of a prophetic hag at the entrance to the hall, seems to me suggestive of the *axis mundi*, world pillar or tree, both site of and means to interaction with the divine. We may also compare the practise of delivering court judgments on hilltops, another expression of proximity with the Otherworld, source of peace and legitimacy (Kelly, *GEIL*, 193) and the symbolic importance of

[36] The conventional Irish expression of the threefold death is examined in Joan Newlon Radner, "The Significance of the Threefold Death in Celtic Tradition", in *Celtic Folklore and Christianity*, ed. Patrick K. Ford (Santa Barbara: McNally and Loftin, 1983), 180-200; the possible earlier conception is pursued in William Sayers, "*Guin agus Crochad agus Gólad*: The Earliest Irish Threefold Death", in *Proceedings of the Second North American Congress of Celtic Studies, Halifax, 1989*, ed. Cyril Byrne (Halifax: St. Mary's University, at press).

[37] *Aided Muirchertaig Meic Erca*, ed. Lil Nic Dhonnchadha, MMIS 19 (Dublin: DIAS, 1984), pars. 41ff; see the important textual amendment in Tomás Ó Concheannain, "The Act of Wounding in the Death of Muirchertach mac Erca", *Éigse* 15 (1973-74), 141-44.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

house-posts (*clí*; *Audacht Morainn*, ed. Kelly, par. 16).

If kingly sins in one or more of the three functional spheres could lead to punishment in the form of the threefold death, so a candidate's prowess in these same domains could provide access to the kingship. We have seen how Cormac rectified Lugaid's judgment; as one text prophesied: *concertfa claenrecht for iathu Banba* "he will correct slant justice in the land of Ireland".[38] The generic term for such actions is *fírbhreith*, "act of truth" in Dillon's rendering (cf. *gúbhreith*),[39] which may take the form of a judgment or may more simply be preparedness to state the true facts, as in the example of the four truths that must be told in order for a magic cauldron to cook Cormac's dinner, this a sign of his legitimate rule. Other routes to the crown were successful force of arms and, representing the third function, the kiss or sexual favors of the goddess or her hideous counterpart, the hag. On winning the crown, the just and successful king is seen to operate in all three of these Dumézilian functions.[40]

The sloping Tara motif survived in Ireland even past the date of Ó Buachalla's last example and, more surprisingly, beyond Ireland. The story of Cormac and Lugaid, in readily recognizable form, albeit without the names, is found among the Marvels of Ireland recounted by the father to his inquisitive son in the Old Norse Mirror of Princes, *Konungs skuggsjá*. Our present version of this Norwegian tract on statecraft may have come down to us with a prologue written in Iceland, but the fullness of the citation of the Tara judgment story and its recall at two later points in the work, where it is the only Irish marvel so treated, argue for a conscious incorporation of the motif of the royal justiciar in this tendentious work on royal and ecclesiastical jurisdictions. To quote from the longest of the three mentions:

---

[38] "Coimpert Cormaic" in *Silva Gadelica*, ed. and trans. Standish H. O'Grady, 2 vols (London: Williams and Norgate, 1892), I.253-56, at 254.

[39] Myles Dillon, "The Hindu Act of Truth in Celtic Tradition", *Modern Philology* 44 (1947), 137-40.

[40] The many benefits of Cormac's just rule, prophesied in the conception tale (see Ó Buachalla on this feature of the heroic biography), are detailed in the epitome *Teasmolad Cormaic: The Panegyric of Cormac*, *SG* I.89-92, II.96-99.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

In that country there is also a place called Tara, which in olden times was apparently a capital or royal borough; now, however, it is deserted, for no one dares to dwell there. It was this event that caused the place to be abandoned: all the people in the land believed that the king who resided at Tara would always render just decisions and never do otherwise; although they were heathen in other respects and did not have the true faith concerning God, they held firmly to their belief that every case would be decided properly if the king passed upon it; and never, they thought, could an unrighteous decision come from his throne.

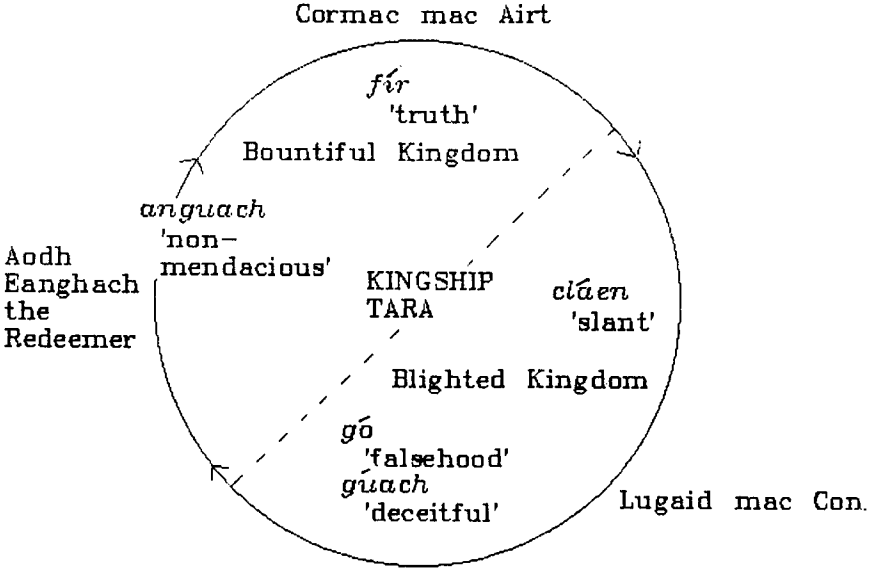

FIGURE 1: The loss and restoration of just rule (the cyclical movement is not intended to reflect the narrative chronology of these stories or of subsequent redeemer literature).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The building of the castle is then described and the account turns to a specific legal case where the king displayed a partial interest. The text continues:

> So the outcome was that the king shaped his decision more according to his own wish than to justice. But because an unrighteous judgment had come whence all people expected just decisions and because of this popular belief, the judgment seat was overturned and the hall and castle likewise, even to their very foundations. The site, too, was overturned, so that those parts of the earth that formerly pointed downward were now turned upward; and all the houses and halls were turned down into the earth and thus it has been ever since. But because such a great miracle happened there, no one has dared since to inhabit the place, nor has any king ventured to set up his throne there; and yet, it is the loveliest place known in all that country.[41]

There also seems to be a hint of the often associated wild man of the

---

[41] Þar er oc ænn iþvi lannde sa staðr æinn er them[ere] er callaðr oc var sa staðr forðum sva sæm hann væri hafuð sæti oc konongs borg en hann er þo nu auðr firir þvi at mænn þora æigi at byggia hann. En þæsse at burðr gerðez til þæss. At staðrenn varð auðr at allt folkit er ivar lanndino truðe þvi at sa konongr er þar sæti a þeim stað skyllde iamnan dœma retta doma oc ængan annan. En þo at þeir væri heiðnir annars costar oc hæfðe æigi retta tru til guðs. Þa hofðu þeir þo þænna atrunað sva stað fastan at þeir hugðu þat hvætvætna rettdœmt væra er sa konongr dœmðe oc alldri hugðu þeir at rangr domr munnde dœmaz af þvi konongs sæti. ... oc gerðez þa sva til at konongr hallaðe meirr domi æptir vilia sinum en æptir rettenndum. En firi þviat þaðan komo rangdœmi sæm oll alþyða hugðe at koma munnde rettdœmi þa snœri um sæti þvi sacar atrunaðar folksens oc snœriz sa castali um oc hollen mæð ollum sinum grundvollum oc sva iorðen mæð oc snœriz þat upp aiorðunne eraðr vissi niðr en hus oll oc hallir snœruz niðr i iorðina. Oc hæfer sva værit iamnan siðan. En firi þvi at sva mikell unndarlegleicr varð, þa þora siðan æigi mænn þann stað at byggia oc ængi konongr þorir þar siðan sitt sæti at hafa oc er þar þo hinn fægrsti staðr er mœnn vitu a þeiri iorðu, *Konungs skuggsjá*, ed. Ludvig Holm-Olsen, Gammelnorske Texter 1 (Oslo: Dybwad, 1945), 24f. (orthography slightly modified); *The King's Mirror (Speculum Regale--Konungs skuggsjá)*, trans. Laurence M. Larson (New York, American Scandinavian Foundation, and London: Oxford University Press, 1917), 113f. In the later recall of the Tara motif, the author moves from the idea that the king could not give an unjust judgment to the more tendentious claim that no judgment was just unless given by the king, the more important issue in 13th century Norway.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

woods motif in the following marvel, where Patrick turns pagans resistant to conversion into wolves. *Laxdaela saga*, in the characterization of Óláfr pái Hǫskuldsson as well as in the account of his voyage of self-legitimation to Ireland, also gives evidence of some acquaintance with Irish concepts of kingship and royal justice.[42]

Traditional stories of Cormac continued to be told in Ireland long past the collapse of the old Gaelic order in the 17th century and the last of the panegyric poems cited by Ó Buachalla. We find, for example, in a folktale collected in Donegal in 1934 practically all the elements of the Lugaid/Cormac story in one form or another, although there are a number of displacements, inversions and substitutions. Other motifs have also entered the story, as the title, "The King Who Could Not Sleep", indicates. Very briefly, King Cormac has three beautiful daughters, one of whom is raped by an otter when the trio went swimming in the king's absence. The king obliges her to tell the truth, saying he would have cut off her head had she not. A fine son, "without deformity or blemish" is born, but despite a promising childhood he begins to pester his grandfather, whom he regards as his father, that he turn the kingdom over to him. When Cormac fails to accede at once, the youngster threatens to take it by force, and to this end enlists outside support. Cormac is killed in battle, as was his father, Art mac Conn, in the older tradition, but not before he too has fathered a son with a smith's daughter. The child is raised among wolves in the common folktale way, one of the typical exceptionalities in the heroic biography. Both the smith grandfather and the wolf motif are found in the original Cormac story. Meanwhile the otter's son has become king under the name Conn. We may compare the name with the Lugaid mac Con of the earlier tale; *doburchú* "water dog, otter", also provides a link to Lugaid mac Con "Hound's Son". Conn's rule is described as follows in Seán Ó Súilleabháin's translation:

> The new king began to make new laws which changed everything that had been done before. Those who could not pay

[42] See the fuller discussion in William Sayers, "*Konungs skuggsjá*: Irish Marvels and the King's Justice", *Scandinavian Studies* 57 (1985), 147-61, and "Portraits of the Prince: Óláfr pái Hǫskuldsson and Cormac mac Airt", *The Journal of Indo-European Studies* 17 (1989), 77-97.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

> their rent were to go to prison and stay there until they paid. The people came to hate Conn. In Cormac's reign the weather had been very fine; harvests were plentiful; the island of Ireland was happy and beautiful. When Conn became king, the wind changed to the north; the land refused to yield crops; summer became winter. Even the chimneys of the palace became crooked with hatred for the king, and half of them fell down. The royal seat was a miserable and deadly place.[43]

The wolf child, Cormac's son, is eventually reintegrated into society by means of a royal insignium left with him as an infant, and after various adventures reveals his kingly potential in judging a case of animal trespass. To the disputing parties he says:

> You are both the same in my eyes. Get your men to shear the wool off the sheep and keep it in lieu of the grass which they ate. If you catch them trespassing again, keep them altogether, but let them go this time.

He later tricks the sleepless King Conn, insomnia here perhaps an alloform of the sexual dysfunction of other failed kings, into forcing the truth of his paternity from his mother, and then into sleeping in a boat on the lake, where he is eventually killed by his otter father, who significantly eats only the head. Cormac's son is recognized as the true king and we must assume that the chimneys stayed straight and in place.

Irish popular tradition also associated contemporary figures with the traditional motif we have been tracking. The great "uncrowned king" of Ireland, Daniel O'Connell, is credited with commenting on the British parliament to which he had been elected that he could scarcely understand how the building could remain standing with the presence

---

[43] Sean O Sullivan, trans., *Folktales of Ireland* (London: Routledge and Kegan Paul, Chicago: University of Chicago Press, 1966); the Irish text is recorded in Vol. 168, 1-44 in the archives of the Irish Folklore Commission.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of a perjurer in it.[44] Most of the early derivatives of *cláen* have continued in Modern Irish; phrases such as *claonbhreath* and *claonadh seanchasa* "distortion of history" (Dinneen) command our attention.

Ó Buachalla's richly documented study obviates the need to offer summary comment on the deep-seated and long-lived Irish tradition of the restoration of just rule. We may, however, recall an aspect of early thought that has perhaps received insufficient attention: homological thinking. We have seen it illustrated in Lugaid's and Cormac's judgments. It was similarly operative in the the larger context of legitimate rule, where Cormac stands for the perfect and just king, and is the precedent for all candidates for the redeemership. Tara represents the ideal kingdom and thus all Ireland, deposition from the kingship there, the loss of all Ireland.

Given the reflection of the Cormac story in the Old Norse *Konungs skuggsjá*, it may be appropriate to end this review on a comparative note, albeit a dark one, calling attention to what we could be called a cultural isogloss, the Irish and Norse conceptions of dystopia, the kingdom without truth, the larger context in which the motif of "sloping Tara" must be seen. The Norse account derives from a seeress and is the *Vǫluspá* with its forecast of Ragnarǫk. The comparable Irish conception is reflected in the prophetic words of the Mórrigan in *Cath Maige Tuired*, where the concern with justice is reflected in the phrases *sen saobretha brecfásach mbrithiom* "false judgements of old men, false precedents of lawyers". Another apocalyptic vision is given by the poet Ferchertne in *Immacallam in dá thuarad*, where we find such lines as *bid furglide cech gó* "every falsehood will be chosen", *artóitsat toraid tria audbretha* "through false judgments fruits will fail", and *forosnaibter gúbretha la hanflaithi in domain dedenaig* "false judgments will be manifested by the usurpers of the final world".[45]

---

[44] "O'Connell Wears his Hat in Parliament", in *Folktales of Ireland*, 232-33; Irish text in *Béaloideas* 11 (1941), 122-24.

[45] *Cath Maige Tuired: The Second Battle of Mag Tuired*, ed. and trans. Elizabeth Grey, Irish Texts Society 52 (Naas: ITS, 1983), par. 167; *Immacallam in dá thuarad*, ed. and trans. Whitley Stokes as "The Colloquy of the Two Sages", *RC* 26 (1905), 4-64, at 36, 38, 44; cf. the poem ed. and trans. by Kuno Meyer, "Ein altirisches Gedicht über das Ende der Welt", *ZCP* 8 (1912), 195f.; st. 11: *túatha cláena*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Distant Past and Its Relation to Current Psychology: A Tour of Psychophysical Dualism and Non-Dualism[1]

Noel W. Smith
State University of New York at Plattsburgh

The texts from Egypt, Mesopotamia, China, Hellenic Greece, and the Indo-Europeans together with the ethnographic record of hunter-gatherers show no indication that psychophysical dualism existed in the earliest times for which we have records. Superhumanism as a form of naturalism held sway rather than supernaturalism. Aristotle's systematic psychology prior to the long history of supernaturalism provides useful insight about a form of psychology that is possible without dualism. Supernaturalism and dualism arose first in ancient India from long standing inimical social conditions and an intelligentsia that could create the abstractions. Several centuries later a parallel situation led to the same result in Hellenistic Europe. Greek psyche as life function became the nonphysical psyche with its ontological separation from the body. These constructions continued as a part of cultural folklore and were uncritically assimilated into psychology first as soul, mind, and consciousness and then as brain powers and information processing. Much of the development of modern psychology has been closely related to a struggle with this dualism. Although history cannot tell us what is true, it can help us more readily see what assumptions we are making today and what alternatives might be available.

Western thought is replete with psychophysical dualism. But did it exist in earlier cultures? Has our own culture always been dualistic? Has dualism always been a part of psychology? Did the Greeks hold to a mind-body dualism? A careful examination of the record shows that the answer to all four of these questions is *no*. Psychophysical dualism

[1] Based on a presentation at the Association for Behavior Analysis, May 24-27, 1991 at Atlanta, Georgia.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

began about 2100 years ago in the West, three centuries after the Hellenic Greeks had developed a naturalistic and systematic psychology (Smith, 1971, 1974, 1977, 1990b). It began many centuries earlier in India, but there too it was preceded by naturalism (Smith, 1990c).

Prehistoric Naturalism

Because many if not most hunter-gatherers believed in a world that is alive with special forces, it is a common assumption that this constituted a psychophysical dualism. For example, Skinner (1963) stated that "mentalistic or psychic explanations of human behavior almost certainly originated in primitive animism" (p. 951). A close look at the anthropological literature, however, discloses that these animistic beliefs involve life-forces that were very much a part of nature (Smith, 1985). They are superhuman but not supernatural (Spiro, 1966). Hunter-gatherers extrapolate from what they can observe of living things that cause events to happen, as well as a from a few nonliving things, such as fire and wind. These extrapolations take the form of spirits and gods and serve as explanations for what they cannot observe. Jahoda (1969) noted that the scientist and the hunter-gatherer both seek orderliness in nature but differ in that the hunter-gatherer seeks no alternative explanation beyond cultural givens, whereas the scientist is less limited.

Writers often refer to the hunter-gatherer's belief in a soul, but this is not a nonphysical entity (Saliba, 1976; Spiro, 1966; Vetter, 1958). It is usually breath, or blood, or life itself (Smith, 1985). In Homer the very name of our discipline had its origins in this concept. *Psyche* was the last breath of life, one's expiration. In *Beowulf* the word "soul" (*sawol*) referred to life itself or components of the body such as blood that were associated with life and with life actions such as thinking and the afterlife (Smith, 1989). Hebrew *nefesh*, translated as "soul," meant one's "living being" or "acting being" (Murtonen, 1958), much like Aristotle's use of "psyche." Even the word "spirit" originally referred to breath. Hultkrantz (1953) noted the difficulty that Amerindians had in reconciling the Christian "soul" with their own belief system. The separation of soul from nature was contrary to their rootedness in nature. The life-force was always perceptible and concrete, sometimes as breath or wind. It might get caught in bushes, might vary in weight and size with changes in health and sickness, might be injured or

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

killed, or might be visible only in a dream or at twilight or to a shaman. Even in its most subtle form, however, it was a concrete thing.

Fortes (1949) described the *yin* of the Tallenci of the Upper Volta River of Africa as a force that influences individual destiny, but he found no dualism. Lienhardt (1961) was unable to find any concept of mind among the Dinka, a tribe on the Upper Nile. Fortes (1965) examined three tribal groups and found nothing like the Christian "soul" but rather concepts that are "wholly within the regime of nature" (p. 128). Lienhardt (1961) held that native peoples do not distinguish between an inner and an outer realm or between a psyche and the world. It is impossible to prove the negative, but I have been unable to find any evidence of psychophysical dualism among hunter-gatherers.

Naturalism in Early Civilizations

When we turn to the first urban centers (for which a deciphered record exists), those of Mesopotamia, Egypt, and China, we find an orientation toward the world and toward humans as a part of the world context that is similar to the orientation of hunter-gatherers. In Sumer, the first of the Mesopotamian states, the major gods were personifications of nature. *An* was sky and *ki* was earth. An was also chief sky god and Ki the earth goddess. The Sumerians called the universe *an-ki*. Similarly, *en* meant "lord" and *lil* "storm". Enlil was "Lord Wind". He was life breath and animation. Breath as a fundamental power central to life is a widespread theme among hunter-gatherers, pastoralists, and early farmers (Smith, 1985). We must guard against interpreting it as a mind-body dualism. The Mesopotamians attributed many psychological acts to the heart as did the Egyptians, Greeks, and many others. (It is easy to recognize the change in heart rate in affective situations and to correlate it with breathing rate.) The Mesopotamians also had four modes of being consisting of vitality, luck, fate, and individual body features (Smith 1974). These modes involved behavior patterns that did not involve any mind-body dichotomies. They reflected concrete conditions and outcomes of actual events.

The Egyptians gave even heavier emphasis than the Mesopotamians to the heart as a locus of psychological events and, like the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Mesopotamians, had several modes of being (Smith, 1974, 1990a, 1990b). The two most prominent were the *ba* and the *ka*. The *ka* was one's power, something like one's credit rating today. The *ba* was closely connected with breath and was the life-energy in the afterlife. In the New Kingdom, the period from about 2000-1780, the *ba* was depicted as a bird with a human head and was often shown breathing into the nostrils of the mummy. The *ba* was not a separate entity but was the individual after death. Žabkar (1968) pointed out that the *ba* is neither an internal or an external entity because no dualism existed; it does not refer to spiritual opposed to material: "The dualistic view that man is constituted of two distinct elements...is alien to the Egyptian..." (p. 113).

In China deities or spirits are forces of nature of which humans are a part. No Christian soul, sin, or immortality except for ancestor worship is present. Worship often involves following custom without much meaning; or the worshiper bargains with the deity for something. The peasantry is usually pantheistic or polytheistic while the upper classes are usually atheistic. A. H. Smith (1900/1972) noted that "polytheism and atheism are but opposite facets of the same die" (p. 313). The emphasis is on the concrete. Either the gods deliver as requested or they don't. Abstractions are of little concern. The Chinese refer to a life-force during life that is called *po*, and this becomes *gui* after death. The *po* is primarily body functions, especially blood. A second life-force is called *hun* in life and *shen* in death and is based on breath. Its length of survival after death depends on social status, but only the *shens* of primal ancestors survive eternally. In Daoism the vitality of the Dao is breath and signifies the harmony of heaven and earth.

Early and Classical Greece

In her presidential address to the American Psychological Association, Denmark (1980) declared that the original meaning of *psyche* was "soul" and "spirit" and went on to say that psychology can now interrelate the intangible and the material. But we have already seen that *psyche* was not a separate entity in Homer; rather it was the last breath of life. The psychological terms that Homer used were connected with body parts. Among several of these I will mention three. *Fren* (sing.) or *frenes* (pl.) was located in the chest or midriff

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

region. It had two aspects. One of these referred to contemplation or to affective behavior of an intellectual sort, such as awe, joy, and appreciation of beauty. The other aspect was affective, and from this meaning of *frenes* we derive "frenetic", "frantic", "frenzy" and "schizophrenia". The intellectual aspect later came to mean mind and from that we got "phrenology". A second term, *noos* (later, *nous*) referred to rational power as opposed to the deliberative character of *frenes*. It meant an immediate grasping of a concept or of seeing a solution. It resided in the chest. Later, Aristotle made *nous* the highest function of *psyche*. A third body power was *kardia*, the seat of affect, located in the heart. The attribution of psychological functions to this organ was very similar to that of many other cultures.

The Ionian Greeks in the 5th century BCE were apparently the first people to reject animistic or superhuman explanations and attempt to describe nature solely in its own terms. This contributed to (or was a part of) the flourishing of philosophy and the beginning of the natural sciences in Greece. In the 6th to 5th centuries BCE the lyric poets began to give affective meaning to *psyche*, and in the 5th century the Presocratic philosophers began to apply *psyche* and *nous* analogically to the cosmos. Anaxagorous, for example, gave *nous* as the origin and cause of operation of the universe as well as that of living things. In Plato's *Phaedo* Socrates took Anaxagorous sharply to task for his attempt to use *nous* to explain all things including human conduct. In a remarkable passage Socrates related why one cannot explain human behavior by resorting to parts of the body, that the parts are necessary but not sufficient conditions for such explanations (*Phaedo*, 97b-99b). Today his argument applies directly to assumptions about brain determiners of behavior. For such putative determiners he would find "a strange confusion of causes and conditions."

This turn away from organocentrism was continued by Aristotle who placed no psychological functioning in body parts but rather in the relationship between organism and object. From his biological studies he came to recognize that many activities involving an organism were not just functions of biological structures but were inextricably related to the objects with which the organism was engaged. He defined *psyche* in a rather organocentric way as the actualization of the body's potential (*De Anima*, 412a, 28-29), but when he described the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

actual activity he did so clearly as interactions. For example, sensing is the joint actualization of two potentials, the potential of an organ to sense and the potential of the object to be sensed. Hence, the sensing is in that joint actualization or interaction and is not localized in the organ or the object. The distinction between sensing and perception that is found today in most introductory psychology books and most texts on perception was set forth by Thomas Reid in the 18th century; it did not exist for Aristotle who had but a single term, *aisthesis*, and a single action.

Similarly to sensing, thoughts are not localized in the organism. They lie in *nous*, but *nous* is nowhere. It has existence only as the thinking act itself and that act is a joint product of the form of the thing thought about and the thinking organism (*De Anima*, 429a, 10 - 429b, 33). A problem that confronts modern day psychologists who assume, à la Kant, that psychological events are only internal representations of an external world is how we can know anything about the external world and how electro-chemical action of cells can become objects and colors for us. This is a non-problem for Aristotle, for he never assumes a dual world to start with. His approach begins not with constructs but with observation of events. Aristotle built on Socrates and Plato, went beyond organocentrism, and presented not even a hint of psychophysical dualism – as even the mentalistic students of Aristotle have noted (e.g., Sorabji, 1972).

Hellenistic Changes

The first century and a half of the Hellenistic period (323-146) was largely one of military empires and dictators along with major scientific and technological achievements, but psychology did not participate in the achievements. The tradition of an objective psychology that Aristotle had developed saw little further development. Instead, the psychological interest in that period was largely personalistic and subjectivistic – one of living in such a way as to achieve detachment or tranquillity in an increasingly dangerous and insecure world. The "coping" philosophies of stoicism, epicurianism, scepticism, and cynicism reflected those needs. (Only in epicurianism, especially in the work of Lucretius in the first century BCE, do we find a systematic psychology – a mechanistic one based on characteristics of atoms.)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

As examples of the achievements in the impersonal sciences, Aristarchos recognized that the earth rotates on its axis, which accounts for night and day, and also that its axis is inclined, which explains the changing of the seasons. He also advanced the heliocentric theory. Eritosthenes measured the diameter of the earth to an accuracy of a few meters of its now known size. The period was also one of such giants as Euclid and Archimedes. But darkness was already on the horizon; and the next century, from 146-30 BCE, was one of decline. Rome gained total power. For four hundred years its administration was so bad that it nearly destroyed Greece and Rome too. Piracy flourished; the ruling class was corrupt from new wealth; working classes were servile. Civil war, international war, and class conflict were rampant. The danger of enslavement or death was great. In this climate rose despair, pessimism, and asceticism (Murray, 1955; Rostovtseff, 1957). Cults flourished. The response to these conditions in the intellectual community was to create the supernatural as a domain to which the debased world did not apply (Kantor, 1963). Philo and others at the School of Alexandria constructed a deity that was completely outside of time and space. Others endowed Greek *psyche* with similar supernatural attributes. One's psyche was akin to the supernatural deity and carried with it the powers of willing and reasoning. As a supernatural power its relationship to the body was that of an insuperable mystery. The psychophysical dualism that has descended to us in modern day psychology and is embraced by such developments as cognitive and humanistic psychology was created by an intelligentsia under the debilitating conditions of long-standing insecurity.

India

A parallel process occurred in India several centuries earlier (Smith, 1990c). When we look at the earliest Indian writings, the *Rig Veda*, we find that the early verses are nature oriented. The limited psychological concepts are concrete and body-centered. The word *atman*, referring originally to "breath" or "wind" later attained a supernatural meaning. The word *manas*, descending from the same Indo-European root as the English word *mind*, referred to a power residing in the heart and was the source of affective behavior. Life

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

required both *atman* and *manas*. As population pressures became great in northern India, tribal warfare broke out. Hunger, poverty, and misery followed. The intelligentsia in the form of the priesthood responded by creating the supernatural, a concept that was beyond the suffering of the world. In the *Upanishads* we find the physical attributes taken away one by one *until* the universal spirit, *brahman*, could only be described by what he was not. Simultaneously, *atman*, the personal counterpart, took on the same nonphysical character as *brahman*. When the Indian writers began developing a psychology in a series of books known as the *Sutras*, they did so in accordance with their culture. This psychology was a psychophysical dualism and was organocentric. For example, when they sought to explain sensing, they recognized that an eye cannot see its own seeing. Consequently they proposed that *manas* must be looking at what the eye sees. But they also recognized that *manas* could not see its own seeing either. Therefore *buddhi*, intellect, must see what *manas* sees. But what sees what *buddhi* sees? It must be the supernatural personal spirit *atman*. One text stops at that point, but in another text the great universal spirit *brahman* looks at what *atman* sees. This infinite regress was a consequence of a culture that had become dualistic.

This account may be fruitfully compared with an account of sensing from a culture that preceded psychophysical dualism, and for this we can turn to Aristotle. Because Aristotle was not oriented toward an internal versus external dichotomy of the organism he had no need to look for sensing inside the organism and did not have to deal with the consequence of an infinite regress. He took up that problem in regard to sensing color (425b, 10-17) but dismissed it: sensing is a joint product of sensible object or quality and sensing organ (425b, 26-27). In fact, he tells us that we do not sense *in* the sense organ but *with* the organ.

Down to the Present

From Hellenistic times onward, psychology has been struggling with psychophysical dualism. From the 17th through the 19th centuries various philosophers wrestled with the dilemma of how to have a nonphysical mind acting on a physical body. All of the attempted solutions involved verbal manipulation, often employing analogies. And none succeeded despite Denmark's (1980) claim that

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

psychology can interrelate the two. Among those attempting a solution, Spinoza held that mind and body were just two aspects of the same thing, like a concave-convex lens, its two sides being but one lens. When looking from the inside we find nonphysical thought. When looking from the outside we find physical body. Leibnitz, in the tradition of Gregory of Nyssa (4th century), tried to solve the dilemma by arguing that God had put mind and body in preestablished harmony at birth but they did not affect each other. They simply responded in parallel harmony: whatever one did the other did also. The French materialists' approach was to turn mind into mechanism. It was what the body produced. According to Cabanis, the brain secretes thought just as the liver secretes bile. Spinoza's double aspect and the French materialist's mind-as-product-of-the-brain are two positions one often sees in the psychological literature yet today. All of these attempted solutions continued to assume two irreconcilable things. No one considered the alternative of starting inquiry with observations of actual events rather than manipulating traditional constructs. In the 20th century came John Watson's attempted solution. At first Watson (1913) declared that we could ignore mind and study behavior. Then (1919) he concluded that mind does not exist, only behavior; and behavior could be studied as conditional reflexes.

Around mid-20th century psychology began to revert back to its mentalistic heritage by building on the computer analogy and giving birth to cognitive psychology in which mind is a computing machine. This was presaged in the 19th century by the philosopher Immanuel Kant who argued that the transcendental mind takes in sensations and runs them through a series of categories from which the mind acquires a representation of the external world. Johannes Müller and Hermann Helmholtz provided a biological version of Kant that contributed to the establishment of mentalism. According to them, we respond only to energies of nerves or to our nerve endings, not to the world. From the Kant-Müller-Helmholtz model of perception we derive the widely held assumption that we live in a double world, a knowable one inside and an unknowable one outside. This model is the source of an infinite regress that the Indian writers of the *Sutras* recognized: something has to interpret the biological creation and that in turn requires another

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

interpreter, etc. The work of Hartley who suggested that sensations and ideas were vibrating nerve strings, Gall and Spurzheim who developed phrenology, Müller and Helmholtz who gave the nerves the role of interpreters, and others in the 18th-19th centuries also gave impetus to the conversion of the nonphysical soul to the brain, thereby reducing psychological events to a self-caused and homunculean biological organ. This conversion perpetuated the same problems of a double world and an infinite regress. Psychology today is replete with computer-brain analogies, double world, brain-produced mind or consciousness, reductionism, and organocentrism – all as legacies from the Hellenistic retreat from nature. The debates about whether psychological events have internal or external causation, or both, and a great many issues that revolve around abstract constructs rather than events descend from this mentalism.

The Lessons of History

History cannot tell us what is true or not true. But it may provide us with insights about the assumptions that we are now making. The following examples illustrate this potential: (a) If we can recognize the origins of mentalism and why the creative attempts to resolve it were futile, we might look for a better approach. (b) When we can recognize that Kant was assuming a double world, one inside and one outside, and that Müller and Helmholtz were presenting a physiological version of it and that this notion comes down to us in assumptions about neural "messages" or "signals", "cues", and inner representations of an outer world, we might ask what alternative assumptions might be possible and whether their consequences might lead us closer to our goals of a psychology as a natural science. (c) If we know that the reductionism of psychological behavior to brain functions originated from attempts to naturalize the nonphysical mind or soul, we might be induced to look for alternatives to both mentalism and reductionism. (d) When we examine the analogies used for psychological behavior over the course of centuries and the assumptions on which these analogies rested, we may see that those in current fashion such as computers and holograms rest on similar assumptions that we might wish to question. (e) If we know that Thomas Reid invented the distinction between sensation and perception and that it did not exist prior to that time it might enable us to raise additional questions about

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

such assumptions rather than assuming that such a dualism is an eternal verity.

Looking back to Classical Greece, if we properly understand the psychology of Aristotle and the absence of dualism, it provides us with a ready-made alternative to dualistic psychology. (Current alternatives, some of which have similarities to Aristotle, occur in French phenomenological and in interbehavioral psychology; in some versions of dialectical, ecological, and contextual psychology; and in behavior analysis and eco-behavioral science.) The contrast between his account of sensing and that found in the *Sutras* is one that could be applied to accounts of sensing found today, just as Socrates' distinction between necessary and sufficent conditions could be applied to the brain doctrine. Again, this will not necessarily show us truth but might help us reappraise and reformulate our approaches.

Used in this way, history can become a tool of analysis without invoking presentism, the assumption that truth is to be found in the present and that history shows the way to this truth. History can help us recognize assumptions that are still with us today and the origins of those assumptions including those rooted in nonscientific sources such as culture, received doctrine, and theology, these being largely interdependent. Because it can show what psychology was like before and after psychophysical dualism, history might enable us to find some directional insights leading to productive paths.

References

Denmark, F.L.
1980 Psyche: From rocking the cradle to rocking the boat. *American Psychologist*, 35, 1057-1065.

Fortes, M.
1949 *The Web of kinship among the Tallensi: Second part of an analysis of the social structure of a Trans-Volta Tribe* (International African Institute). London: Oxford University Press.

Fortes, M.
1965 Some reflections on ancestor worship in Africa. In M. Fortes & G. Dieterlen (Eds.). *African systems of thought: Studies presented and discussed at the Third International African Seminar in Salisbury*, Oxford University Press.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Hultkrantz, Å.
1953 *Conceptions of the soul among North American Indians: A Study in religious ethnology*. Stockholm: The Ethnological Museum of Sweden, Monograph Series, Publ. 1.

Jahoda, G.
1969 The psychology of superstition. Baltimore, Md.: Penguin.

Kantor, J. R.
The scientific evolution of psychology, Vol. 1. Chicago: Principa Press.

Lienhardt, G.
1961 Divinity and experience. London: Oxford University Press.

Murray, G.
1955 Five stages of Greek religion. New York: Doubleday, Doran.

Murtonen, A.
1958 The living soul: A study of the meaning of the word *naefaes* in the Old Testament Hebrew language. *Studia Orientalia*, 23, 3-105.

Rostovtseff, M.I.
1957 *The social and economic history of the Roman empire*. (2nd rev. ed.), 2 vols. Oxford: Clarendon Press.

Skinner, B. F.
1963 Behaviorism at fifty. *Science*, 149, 951-958.

Saliba, J. A.
1976 *Religion and the Anthropologists*, Part I. Anthropologia, 18, 179-208.

Smith, A. H.
1900/1972 *Chinese characteristics*, 5th ed. Shannon: Irish University Press.

Smith, N. W.
1971 Aristotle's dynamic approach to sensing. *Journal of the History of the Behavioral Sciences*, 7, 375-377.

Smith, N. W.
1974 The ancient background to Greek psychology. *Psychological Record*, 24, 309-324.

Smith, N. W.
1977 *Aristotle*. International encyclopedia of psychiatry, psychology, and neurology (pp. 125-126), Vol. 6. New York: Van Nostrand Reinhold.

Smith, N. W.
1981 Corrections on the use of "psyche". *The Interbehaviorist*, 10 (4), 6-8.

Smith, N. W.
1985 Belief systems – a psychological analysis. *Mankind Quarterly*, 25, 195-225.
1989 Indo-European psychological concepts and the shift to psychophysical dualism. *Mankind Quarterly*, 30, 119-127.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

1990a Psychological concepts under changing social conditions in ancient Egypt. *Mankind Quarterly*, 30, 317-327.

1990b The continuity between Greek and interbehavioral psychology. In N. W. Smith (Ed.), *Greek and interbehavioral psychology: Selected and revised papers* (pp. 3-16). Lanham, Md.: University Press of America.

1990c The evolution of psychophysical dualism in ancient India: From the *Rig Veda* to the *Sutras*. *Mankind Quarterly*, 31, 1-15.

Sorabji, R.

1972 *Aristotle on memory*. Providence: Brown University Press.

Spiro, M. E.

1966 Religion: Problems of definition and explanation. In M. Banton (Ed.), *Anthropological approaches to the study of religion* (pp. 85-126). London: Tavistock.

Vetter, G. B.

1958 *Magic and relgion: Their psychological nature, origin, and function*. New York: Philosophical Library.

Watson, J. B.

1913 Psychology as the behaviorist views it. *Psychological Review*, 20, 158-177.

Watson, J. B.

1919 *Psychologyfrom the standpoint of a behaviorist*. Philadelphia: Lippincott.

Zabkar, L. V.

1968 *A study of the ba concept in ancient Egyptian text*. The Oriental Institute of the University of Chicago, Studies in Ancient Oriental Civilization, Nr. 34.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Decline and Fall of the Freudian Empire

Hans J. Eysenck
University of London & Maudsley Hospital, London

Clothbound 192 pages

CONTENTS

Freud the Man
Psychoanalysis as a Method of Treatment
Freud and the Development of the Child
The Interpretation of Dreams
The Experimental Study of Freudian Concepts
Psycho-babble and Pseudo-history
Bibliography and Indexes

Freudian theory has recently attracted considerable attention as new developments in science and statistical processes have brought the validity of his conclusions into question.

The author, who may claim to be the world's most frequently cited psychologist, argues that Freudian psychoanalysis is largely imaginative, lacks experimental justification, and is totally lacking in any claim to scientific authenticity.

ISBN 1-87465-01-5
Price $35.00

Scott-Townsend Publishers
P.O. Box 34070
N.W. Washington D.C. 20043
Tel: (202) 789-0231 Fax: (202) 842-1758

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Cranial Capacity and IQ

R. T. Osborne
University of Georgia

As was the case in much of his other research, Sir Francis Galton (1888) was the first to report a quantitative relationship between human cranial capacity and mental ability. Galton's subjects were 1095 Cambridge undergraduates. The statistical techniques available to him in 1888 did not include Pearson's correlation coefficient nor an objective Binet-type measure of intelligence. Galton computed head capacity simply by multiplying head length by breadth by height. No adjustment was made for thickness of the skull. Mental ability was estimated from average college marks. He found the relationship to be low and insignificant. Years later when Galton's 1888 data were reworked the correlation between head capacity and college marks was found to be in the range of *rs* reported by Pearson (1902, 1906, 1926), Pearl (1906) and many others.

From Galton's early paper to Lynn's series of studies in 1989-1990 there were at least 38 published investigations of the relationship of human head measurements to mental ability but only about one in four used cranial capacity as a head measurement despite the fact that in 1901 Dr. Alice Lee had developed a formula for determining cranial capacity which corrected for thickness of the skull. In the present study, which correlates mental ability with head capacity, Lee's formula was applied to head measurements of 476 subjects from the Georgia Twin Study (Osborne 1980). At the suggestion of Richard Lynn (personal communication) two additional correlations were computed, mental ability vs. head circumference and mental ability vs. cranial capacity with height and weight controlled.

The Georgia Twin Study database contains 127 measures of physical, mental and personal characteristics for 238 pairs of twins. In this analysis only the following variables will be used; age, race, sex, height, weight, head length, head width, head circumference, and IQ

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

obtained from the average of the twelve mental tests of the Basic Battery of the twin study.

The 476 subjects ranged in age from 12 to 18 but 2 subjects age 12 were placed in the 13-year-old group and 26 age 18 were combined with 70 subjects age 17 to yield a total of 96 for the oldest age group. There were 100 subjects age 16, 96 age 15, 116 age 14, and 68 in the 13-year-old group, including the two 12-year-olds who were assigned to the group. Of the 476 subjects 106 were white males, 84 black males, 118 white females and 168 black females. It should be mentioned here that in the total group of 476 subjects there are 50 pairs of unlike-sexed twins.

TABLE 1

Correlations between Mental Ability, Head Capacity and Head Circumference by Age, Race and Sex

AGE	Number	Correlation between IQ and Head Measurements (a.)	(b.)	(c.)
White Males				
13	5	.451	-.072	-.345
14	25	.334	.112	.371
15	23	.150	.351	.144
16	26	.042	.113	-.033
17	27	.162	.042	.208
Total	106	.278	.161	.217
Black Males				
13	20	.106	.228	.071
14	29	.319	-.030	.398
15	12	.211	.536	.323
16	12	-.252	.137	-.299
17	11	.396	.646	.811
Total	84	.296	.340	.250
White Females				
13	11	.716	.632	.484
14	23	.312	.311	.286
15	23	.340	.295	.366
16	30	.237	.356	.286
17	31	.167	.015	.122
Total	118	.387	.231	.367
Black Females				
13	32	.043	-.243	.086
14	39	.509	.496	.555
15	38	.417	.261	.369
16	32	.061	-.051	-.003
17	27	.521	.236	.292
Total	168	.325	.126	.307
Total Group By Sex				
Sex				
Male	190	.447	.163	.300
Female	286	.295	.019	.292

(a.) Pearson r (IQ vs. Head Capacity)
(b.) Pearson r (IQ vs. Head Circumference)
(c.) Partial rs (IQ vs. Head Capacity) Ht. and Wgt. partialed out.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

For this reason the number of subjects in an age-sex analysis does not always yield an even number as would be the case if all the twins were like-sexed. For example, there are five subjects in the 13-year group of white males. At least one of these subjects has his twin in the white female group. In addition to the 50 pairs of unlike sexed twins, 20 pairs of white males were DZ, 21 MZ; 11 pairs of black males were DZ, 18 MZ. Of the white females 21 pairs were DZ, 26 MZ. Twenty eight pairs of black females were DZ, 43 MZ. The complete break-down by age, race and sex is given in Table 1.

Head capacity was determined by Lee's formula which requires head height. Since this measure was not one of the 127 twin-study variables, head height was estimated from a table prepared by Berry and Porteus (1920) and reproduced by Penrose as Appendix 2 (Penrose 1963).

From Table 1 it is seen that in the first phase of the analysis correlations were computed by age, for four race-sex groups. Because of the small numbers in some of the categories little credence can be placed in the *rs*. However, the correlations for the total race-sex groups compare favorably with recent studies of head measurements as they relate to mental ability. Among the mostly positive *rs* the insignificant and even negative *rs* at the 16-year level stand out. These subjects are all age 16; this is not a collapsed age bracket as we have at ages 13 and 17. The 16-year-old white males, black males and black females show this deviation in *rs* from adjacent ages. All the correlations in the table for white females are positive and compare favorably with the total *rs* by sex. Since the subjects' ages were not determined until after the tests were administered there is no way some 16-year-olds could have been singled out for special or different treatment from 15-year-olds or 17-year-olds. In the case of black males the small number of cases might have been a factor but not in the case of black females nor white males.

Since Galton's 1888 study there have been at least 21 published studies examining the quantitative relationship between head measurements and mental ability. The first significant correlational study was Pearson's 1902 Royal Society paper, which he published again in 1926 in *Annals of Eugenics*. Results of studies before 1902 for the most part here reported as differences in means.

There has been little agreement among investigators as to which

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

cranial measurements yielded the best estimate of cranial capacity. They varied from simple head width to brain weight/spinal cord weight ratio. Head circumference was the most frequently used head measurement, Correlations ranged from .02 in one of Lynn's studies (1989) to .41 (Wienberg 1974). Cephalic index consistently produced a very low or negative correlation with mental ability. Galton estimated cranial capacity by multiplying head length by head height by head breadth but he had no method of estimating the relationship between the variables except to show mean differences. Since Galton's Cambridge study numerous other investigators have used cranial capacity to compute head measurements-mental ability correlations. The range of *rs* for these studies was from .08 (Reed, 1923) to .14 (Passingham 1979).

In Table 1 correlations between head capacity and mental ability and head circumference and IQ are shown by age for four different sex-race groups and for the total group by sex. Also given for the five groups are the *rs* between IQ and head capacity with height and weight partialed out. From the table a trend of consistent age differences in correlations is not apparent unless it would be that of the white females who show slightly decreasing *rs* with increasing age. When only total groups are considered; i.e., all white males, black males, white females and black females, the *rs* between IQ and head capacity are higher than any reported in the literature. When the two races are compared, *rs* for females are significantly higher than those for males. The pattern does not hold when comparing total group *rs* for head circumference and IQ. Black males *rs* > than black females and white females *rs* > than white males. As would be expected when partial r's are computed between head capacity and IQ with height and weight partialed out the *rs* are attenuated when compared with those between head capacity and IQ alone.

While the database for this study was the 238 sets of twins from the Georgia Twin Study (Osborne 1980) intraclass correlations or other twin statistics were not computed. Each member of a twin pair was treated as an individual for our analysis. Positive correlations were found between head size as measured by head capacity and IQ and by head circumference and IQ. The *rs* were significant when the subjects were grouped by race and by sex. When the subjects were analyzed by age, race and sex the groups were too small to yield a pattern of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

meaningful correlations.

This article supports the recent studies of Lynn (1989, 1990) and Broman (1987) which found a positive association between human head size and intelligence. Lynn interprets this finding as an explanation for the rapid evolution of brain size in hominids during the last 3-2 million years. Our finding that head capacity-IQ correlations *rs* hold up equally for males and females and for both blacks and whites is the unique contribution of this paper.

References

Berry, R. J. A., Porteus, S. D.
1920 Intelligence and Social Valuation, Vineland Training School Publications, No. 20.

Broman, S., Nichols, P. L., Shaughnessy, P., Kennedy, W.
1987 Retardation in Young Children, Hillsdale, N.J.: Erlbaum.

Galton, F.
1888 Head Growth in Students at the University of Cambridge, *Nature*, 38; 14-15.

Lee, Alice and Pearson, K.
1901 A First Study of the Correlation of the Human Skull, *Phil. Trans. Royal Society*, 196 (Series A): 225-264.

Lynn, R.
1989 A Nutrition Theory of the Secular Increases in Intelligence; Positive Correlations between Height, Head Size and I.Q., *British Journal of Educational Psychology*, 59:372-77.
1990 New Evidence on Brain Size and Intelligence: A Comment on Rushton and Cain and Vanderwolf, *Person. Individ. Diff.*, 11:795-797.

Osborne, R. T.
1980 *Twins: Black and White*, Athens, GA: Found. for Human Understanding.

Passingham, R. E.
1979 Brain Size and Intelligence in Man, *Brain, Behavior and Evolution*, 16: 253-270.

Pearl, R.
1906 On the Correlation between Intelligence and the Size of the Head, *Jour. Comp. Neurol. and Psychol.*, 16: 189-199.

Pearson, K.
1902 On the Correlation of Intellectual Ability with the Size and Shape of the Head, *Royal Society Proc.*, 69: 333-342.
1906 On the Relationship of Intelligence to Size and Shape of Head, and to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

other Physical and Mental Characters, *Biometrika*, 5; 105-146.

1926 On Our Present Knowledge of the Relationship of Mind and Body. *Annals of Eugenics*, 1: 382-406.

Penrose, L. S.

1963 *The Biology of Mental Defect*, New York, NY: Grune and Stratton, Inc.

Reed, R, W., Mulligan, J. H.

1923 Relation of Cranial Capacity to Intelligence, *Jour. Royal Anthropological Inst.*, 53:322-332.

Weinberg, W. A., Dietz, S. G., Penick, E. C., McAlister, W. M.

1974 Intelligence, Reading Achievement, Physical Size, and Social Class, *J. Pediatrics*, 85: 482-489.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Virtue in "Racism"?

Raymond B. Cattell
Distinguished Research Professor Emeritus, University of Illinois

At a time when racism is a widely discussed issue, it behooves us to look at it more broadly than as an issue in affirmative action.

Geneticists in the last decade have formulated a view of the animal kingdom that describes what they call "altruism" as an inverse function of the genetic distance between the interacting individuals or species. That is to say, individuals are indifferent or hostile to others in proportion to their genetic unlikeness.

Recently support has come to this generalization from an unexpected quarter. Research on heredity by the new MAVA method permits a calculation of the interaction of heredity and environmental influences that is not possible by the older twin method. The remarkable finding is that for every trait measured in humans the correlation is negative between the heredity and the environmental pressure. That is to say, individuals who deviate from the average most strongly on the genetic component are pushed toward the mean by environment. This is shown in Table 1.

The relation may be illustrated by the ordinary intelligence test measurement – crystallized intelligence in Table 1. Here within the family i.e. among siblings, there is a correlation of -.52, suggesting that the duller members are more pressed on and the brighter members neglected. However, the greater effect (-.81) is *between* families. That is to say, the average of the children in a genetically dull family are strongly pressured, e.g., by Head Start, toward the mean, while the average of the bright family is either left untouched or pushed toward the mean. This is true of crystallized intelligence, which is possibly 50-70% environmentally determined, versus 20% for fluid intelligence. These between-family values are the best indication of what is going on in society as a whole, for they indicate the general effect of society upon the family units.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

TABLE 1
Genothreptic Correlations
(Data from Cattell, 1982, pp. 330-376)

From Questionnaire Measures of Factors
By overlapping simultaneous equation solutions (OSES)

16 PF Factors	Within Families	Between Families
Ego Strength, C	-09	-78
Dominance, E	-33	-90
Surgency, F	-30	-92
Super Ego Strength, G	26	-1.00
Parmia, H	-23	-91
Premsia, I	-44	-70
Guilt, O	-17	-92
Self-Sufficiency, Q_2	-35	-89
Self-Sentiment, Q_3	-26	-95
Tenseness, Q	-37	-93
Mean Value	-24	-58
From Objective test Battery (Secondaries in Q-data) (From Least Squares Method)		
U.I.16	-92	-93
U.I.17	-39	1.0
U.I.19	-17	-86
U.I.21	59	-95
U.I.23	06	-79
U.I.24	02	-58
U.I.25	-44	-20
U.I.26	-41	-90
U.I.28	-42	-90
U.I.32	-40	-93
U.I.33	-81	-96
Fluid Intelligence, g_f	-.59	-59
Crystallized Intelligence, g_c	-.52	-81

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

These "genothreptic" findings are very recent and it remains for social psychologists to develop theories of *why* this "coercion to the bio-social mean" occurs. A critic of TV has suggested that since advertising is directed to the largest numbers, the intellectual level of "carrier shows" caters for the average. It stimulates the dull and leaves the bright bored. The effect can even be seen in the classroom where the busy teacher presses attention on the backward "to catch up" and necessarily leaves the bright undirected.

The coercion to the mean effect has long been noted by observant writers. Voltaire remarked that the impact of a true genius could always be verified by the fact that all the mediocrities gang up against him. We are used to the genius living in an attic and the incompetent being supported and cared for by community welfare.

Society loves its average. It is an instinctive reaction which preserves the species intact. However, it also plays a part in the generation of new species. When a whole subgroup – by genetic drift or unusual environmental selection – begins to break off, the unity and special character of the newly emergent group are preserved by coercion to its mean – with inter-breeding of the main group deviators. Perhaps something like this explains the development of Cro-magnon man, despite being surrounded in the same geographic regions by Neanderthalers.

All this bespeaks the existence of an innate racialism as an evolutionary force – a tendency to like the like and distrust the different. As an instinct it may not be as strong as the primary instincts of sex, fear, hunger, etc.; but we have every reason to posit its existence. Just as civilized society has constantly to battle an innate sex drive, so the evidence that it has had to battle racism is sufficient evidence that an innate drive exists.

Modern society has pronounced its ethical condemnation of racism, but in the long run has met with little more success than in religion and in its condemnation of sex and aggression. It is time to recognize clearly that race-consciousness is a natural tendency, with which our socio-political life must come to terms.

One way is to avoid too great a diversity within a politically organized society. Contemporary societies made up of a mosaic of ethnic components have potential advantages. For example, social

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

experiments can be tried out in one subgroup and, if successful, adopted by all. Something of this kind exists in the degree of independence of the fifty American states. But, as in current Yugoslavia, perhaps the mosaic can go too far and lead to conflict.

This is a matter for investigation, which will remain uninvestigated until social psychologists wake up to the existence of a natural, innate racism. Like all instinctive forces, it has its virtues and its vices. There are situations in which it can advantageously be cultivated, and others where it is a source of trouble. But even when, in the latter circumstances, it appears necessary to suppress it, we should recognize the consequences of suppressing innate drives and the need to respect what is, in other circumstances, a virtuous gift. It was such in the Second World War, when it gave tremendous power to the anti-Nazi attack. It plays an unspoken part, among most Africans, in the attitude of the public to the Negro and the Hispanic. It is time for social scientists openly to recognize it as something other than a perversion, to measure it, and to understand how best to shape society to adjust to it.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Group Differences Revealed in Morphogenetic Parameters

F. J. Irsigler
Paardekraal Hospital, Krugersdorp, Transvaal

There were previous attempts to quantify stages in the evolution of the hominid brain: G. Elliot Smith (1928) regarding the temporal area which reaches the latest full maturity in phylogenesis and ontogenesis; Schepers (1949) using Kappers' and Weidenreich's "sylvian angle" from gorilla to man; Geschwind and Levitsky (1968) regarding the speech region (planum temporale). A new method has been developed since 1979, based on the ratio of the allocortical infratemporal plain to the isocortex of the temporal convexity, called "Neocorticalisation Index". Measurements in 128 freshly recovered human brains were analyzed by two competent centers for statistical computation. They reveal group differences with regard to infancy, gender, and phyletic stock (race).

> The fact that our conscious activity is rooted in instinct and derives from it its dynamism as well as the basic features of its ideational forms has the same significance for human psychology as for all members of the animal kingdom. Human knowledge consists essentially in the constant adaptation of the primordial patterns of ideas that were given us *a priori*. These need certain modifications, because, in their original form, they are suited to an archaic mode of life but not to the demands of a specifically differentiated environment. If the flow of instinctive dynamism into our life is to be maintained, as is absolutely necessary for our existence, then it is imperative that we remold these archetypal forms into ideas which are adequate to the challenge of the present.
>
> *Carl G. Jung*

Introduction: On Morphofunctional Theory of Behavior

I first wish to focus on certain aspects of morphofunctional theory of behavior (Irsigler, 1975, 1976, 1979 a, b, 1988). They mean the assumption of a physical or causal determinacy as the principle of cerebral activity. Succinctly: "the scientific assumption that the brain functions as a machine" (Addendum to Part II of Popper and Eccles' "The Self and Its Brain," 1977). This is the modern, positivist and behaviorist equivalent of Thomas Aquinas' "Quid quid movetur, ab alio movetur" (Rougier, 1960:95, 230, 238).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

This means:

either, the phenotypical control by the social group acting as a supreme unit, that is, playing the same role that "population" does from the point of view of genetics and therefore from that of instinct (Piaget, 1976:61);

or, "Consciousness" as the ultimate causal determinant controlling, in a downward nested hierarchy, the lower brain functions, including the pattern of impulse firing, in short: "Mind moves matter in the brain" (Sperry, 1983:81, 94, 118);

or, finally, in the neo-Darwinian model, cumulative selection and its predictable and inevitable consequences "no matter how many links there are in the chain from cause to effect" (Dawkins 1986:134 ff), that is, from gene to the phenotype's behavior. This model of causal efficacy leads to attempts of localizing the so-called "higher cortical functions", such as consciousness and language, in singled-out high-level parts of the brain, be these the "liaison brain", ensembles of neurones in the cortex of the dominant (and perhaps also the minor) hemisphere having the "transcendent property" of being "open" (or half-open) to consciousness, as in the dualist-interactionist hypothesis (Popper and Eccles, 1977; Glezer et al., 1988), or be it the theory of "multistage localization of functions in various fields of the cortex", as proposed by "modern materialistic psychology" (Luria, 1980:30), an extended version of the pavlovian reflex principle.

The morphogenetic principle is wholly different. It rests not on the notion of "substance" (physei) but that of "form" (thesei), to use the age-old terminology. In a nutshell: it rests on the idea of a dyadic relation (later on called "morphism") between two systems of information transfer, the vertical from one generation to the next, and the horizontal, displayed in each generation and called "teleonomy", meaning the "science of adaptation" (Dawkins, 1982:81).

According to the "postulate of objectivity" (Monod, 1970) the relation is one of causal and temporal precedence, consubstantial with science, but leading to a "fundamental dilemma" (Monod, 1972:32). According to F. Jacob's "Logique du vivant", it is a "cycle of events" (cycle d'événements, Jacob, 1970:318). We call it "Cerebral morphogenetic integration".

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

I. Cerebral morphogenetic Integration

> "I believe there is evidence that behavior has the same history and the same origin as form and physiological processes; in fact, the division between physiological function and behavioral function is an artefact of our mode of looking at animals, and these functions shade into each other and are, thus, objectively indistinguishable. This thesis is an anathema in certain circles of behaviorism because it would lead to the conclusion that behavior must always be investigated in terms of specific species, and this proposition runs counter to the belief that of many psychologists."
>
> *Eric H. Lenneberg*
> "Biological Foundations of Language" (1967)

I.1 Statistical Information Theory

The concept of natural selection is likely to be misunderstood in a quasi-Lamarckian, i.e. morphofunctional way. Though unaware of statistical analysis as a method, later used by Mendel with great success, Darwin, in fact, based his inferences on observations of large populations and in an empirical way; in other words, he applied the method which, in the hands of Boltzmann and Gibbs became the fundament of statistical thermodynamics. The underlying principle is the coincidence of average and most probable distributions for large members of "events" (Jacob, 1970:18 4, 191, 215).

It turns out, in statistical information theory, that information is closely related to a physical quantity (S) called "entropy" in thermodynamics which, in its turn, is related to probability (P), a dimensionless quantity or pure number. It reveals its binary character, the choice being 0 or 1 (Brillouin, 1971:120). Probability, in any evolutionary process, tends to increase, just like entropy, the exact relation being given by the Boltzmann = Plank formula $S = k \text{ in } P$, where k is the famous Boltzmann constant and in the natural logarithm to the basis e.

In morphogenesis, information transfer is considered to be an assimilating and differentiating relationship between cell layers of different phyletic ancestry. In the process, called "induction" (Spemann, 1936:92) the neuronal layers concerned retain their independent rates of differentiation "spreading in space".

In a given species, the adaptive (telonomic) level corresponds to the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

quantity of information transferred in order to assure the species' morphogenetic project, viz. survival and expansion (Monod, 1972:22 ff).

Given n different selections, each of them meaning either survival or extinction, means a total number of possibilities P=2n, giving the thermodynamic definition of information I = k ln P. Taking k as Boltzmann's constant, we measure information in entropy units (Brillouin:3).

To illustrate the point of bifurcation (de Mahieu, 1972; Prigogine, 1977): "It is because the ancestors of the horse at an early period chose to live upon open places...that the modern species, following a long evolution made up of many stages of reduction, today walks on the tip of a single "toe" (Monod, 1972:122).

It is thus information transfer which links reproductive invariance and ontogenetic adaption enhancing group cohesion. Explaining the key issue of adaptedness, Dawkins (1982:173 ff) recalls Lorenz' key-lock analogue recognizing adaptedness as an "informational match" between organism and environment. The choice between "match" and "non-match" reflects the binary (dichotomist) character of information in the logarithmic expression given above.

In the "conflict" between organism and environment, the former always "calls the tune": le milieu ne fait jamais que répondre (Jacob, 1970:185).

To sum up the theoretical part:

(1) The species' behavior in response to a given environmental condition (its "emotional truth", Cattell, 1972:28) rests upon morphogenetic information transfer expressible as a pure quantity or number.

(2) The binary character of species-typical behavior relates to the dual origin and character of the mammalian neocortex.

(3) In behavioral terms, morphogenetic integration means transfer of a cognitive-affective "form" or Gestalt (=morphe in Greek) reflecting brain states and brain processes at the species' characteristic level.

(4) The dual organization of behavior is the crucial feature of cerebral integration.

I.2 The Reptilian Heritage

It goes back to the jurassic mammal-like reptiles, i.e. the sauropsid/

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

therapsid bifurcation (Diepen, 1962, Northcutt, 1967, Stephan, 1975, MacLean, 1978). In the mammalian brain, it is represented twofold: by fibre tracts and by neuromediator (paracrine) messengers.

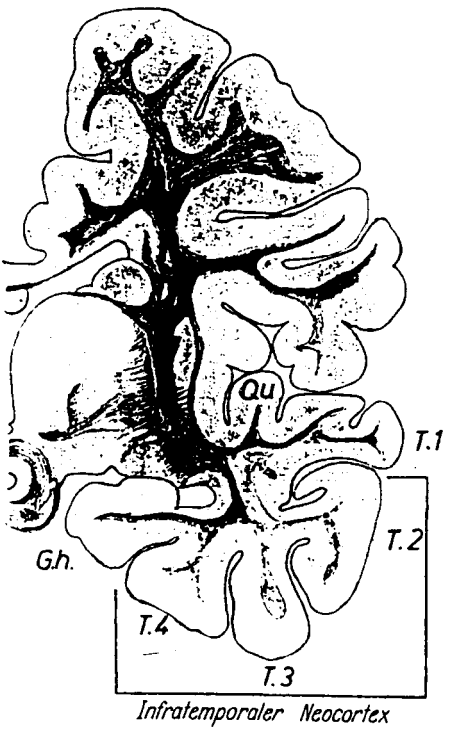

FIGURE 1: Coronal section through the left half of the brain at the level of Heschl's transverse convolution (Qu).

Infant aged seven weeks. To show phylogenetic/ontogenetic dissociation.

The early-myelinized white matter of the convexity and that of the gyrus hippocampus (Gh) is blackened (Heidenhain-Woelcke stain). The infratemporal sector of Flechsig (1920) or "basal Neocortex" is late-myelinized (indicated). It includes the middle (T2) and inferior (T3) temporal gyri, and the fusiform-hippocampal gyrus (T4).

For terminology see Irsigler, 1984a :9 (From Luers and Spatz, 1957, see References).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

(1) the adrenergic median forebrain bundle (MFB), present in the lower vertebrates, subserves the dominant attitude; its antagonist, the cholinergic periventricular system (PVS) subserves the aggressive behavior. They are the main pathways bringing together the orbitofrontal and anterior insular cortical areas, that is, the basolateral limbic circuit (Livingston and Escobar, 1971) and the olfacto-striate-pallidal complex, the so-called "reptilian type brain" or reptilian driver", present in animals ranging from reptiles to man.

(2) The hormonal way of information transmission ("information circulante", Laborit, 1974) is by means of chemoaffin messengers distributed through the extracellular and perivascular spaces. It is called "the core of the neuraxis" and consists of a string of steroid hormone-concentrating neuronal groups, largely coincident with the limbic (=palaeomammalian)system, the limbic axis or limbic-midbrain area (Nieuwenhuys, 1985). It constitutes a closed loop, self-referring circuitry between the reptilian-palaeomammalianand the human level of cerebral activity, providing, in the words of MacLean (1978:49), "the avenues to the basic personality".

I.3 Quantified Information (Heterochrony)

(a) Information is energy, that is, a quantity or pure number, measured in arbitrary units, as the statistical theory shows. Expressed in morphogenetic terms, it is the amount of energy transmitted and received to assure the species' survival and multiplication (Monod, 1972:25).

From the thermodynamical point of view, information means decrease of entropy ("negentropy")near equilibrium, characterizing the "steadystate" of minimum entropy production (Eigen, 1971).

(b) In evolution, a special kind of information is at work, associated with a high "selective value" with respect to individual reproduction. It is called "semantic information" (Brillouin) or "teleonomic information" (Monod). According to Eigen, it is the "driving force for evolution" (Eigen, 1971:517).

We define information as the quantity of energy "driving" from the dynamic relation between preservation of genetic invariance from one generation to the next and deployment or unfolding of the structures at each generation. This represents a binary system of vertical and horizontal communication allowing to convert a series of transforma-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tion in space into an isomorph series of transformations in time (Jacob, 1970:162, 318). It is at the heart of Jacob's "logigue du vivant"; we call it the "Jacobian morphism".

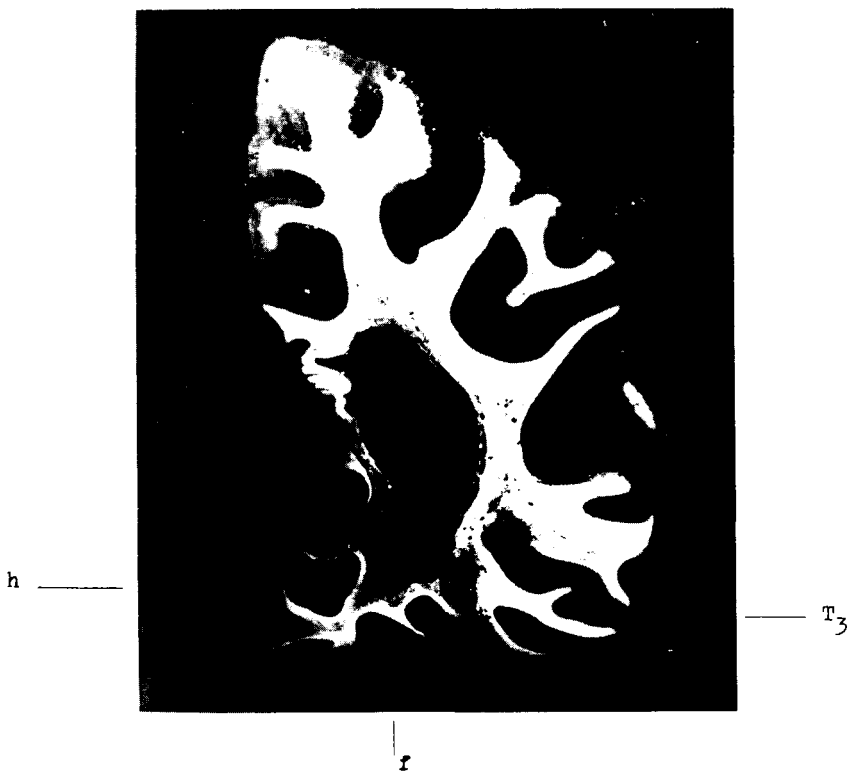

FIGURE 2: Coronal section through the left hemisphere of the brain of a patient who has died from Pick's disease.

Note: (1) shrinkage of cortex covering the fusiform-hippocampal gyrus f and the adjacent inferior temporal gyrus T3, (2) discoloration (blackening) of the white matter within the infratemporal sector of Flechsig (compare with Fig. 1), (3) gross dilatation of the ventricular system, including the temporal horn h of the lateral ventricle, due to loss of nervous tissue (atrophy) of the striate-pallidal and insular grisea. In Pick's disease, early and late-myelinized cortices undergo atrophy. (By kind permission from D. H. Jakob, Wiesloch).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

(c) The essential point is the rise of new phenotypes, called "speciation". They may arise not only at the end, but at any stage in the ontogenetic sequence, a phenomenon known since Haeckel and called "heterochrony" (Garstang, 1928; de Beer, 1930; Sewertzoff, 1931; Spatz, 1937; Gould, 1977). It means a spacetime shift in the onset and the rates of differentiation being retarded or accelerated in the descendant in relation to his ancestor. Haeckel considered it as an exception to his "biogenetic" rule. In the context of the Jacobian morphism, it means the transposition from isomorph to heteromorph speciation, the key concept of "Evolution by Law" (Willis, 1940; Groves, 1989).

Thus, Sewertzoff's original idea of "Anabolie" as a dynamic relation between ontogeny and phylogeny has reappeared in modern form as Schindewolf's "proterogenesis" and in Rensch' (1971) "Anagenesis" meaning development towards higher phylogenetical levels in the sense of "progressive evolution" (Tobias, 1985).

In terms of cerebral (allo-neocortical) integration, heterochrony is equivalent to distinct morphogenetic stages or "shifts" occurring at the allocortical and neocortical levels of brain evolution. In the human species, they result in the onion-like deployment of a "maturation gradient" characterizing the neocortex of the sapiens brain (C. and O. Vogt, 1919; Flechsig, 1920; Spatz, 1937; Kahle, 1969). The fronto-temporal and anterior insular cortices are the latest to reach cyto- and myelogenetic maturity.

(d) Our method of quantification has been described previously (Irsigler, 1983; 1984a; 1989; 1991). It rests on two assumptions of quantitative morphogenesis. It assumes, first, that evolution is a deployment of spacetime relationship between phylogenetic (reproductive) invariance and ontogenetic (individual) "deflection" (Lovtrup, 1974; Sanides, 1975). These deflections appear as stages or "jumps" at the allocortical and neo-cortical levels of cortex evolution and intervene with Darwinian gradualism; second, it is assumed that the ratio of the linear extension of the infratemporal plain (B) to that of the temporal convexity (C) is a morphogenetic invariant of information between phylogeny and ontogeny. The ratio, called "Neocorticalisation Index NI" is a heuristic construct derived from measurements in prehominid endocranial casts and in modern sapiens brains, freshly recovered and measured in the mortuary. The results were submitted for analyses of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

variance by different methods to the Institute for Biostatistics, South African Medical Research Council, Johannesburg, and to the Centre for Advanced Computing and Decision Support, Pretoria. Of assistance was also the Research Organisation, Chamber of Mines, Johannesburg. Table 1 shows the principle of the method adopted in the present work.

Table 1

		R(ight) hemisphere			L(eft) hemisphere		
White	n 55	B 50	C 36	NI 1,39	B 51	C 33	NI 1,55
Black	46	46	36	1,28	49	32	1,53

Hemispheric lateralisation in terms of "Neocorticalisation Indices NI" as explained in the text, measured in a random sample of 101 brains. The extensions of the infratemporal plain (B) and of the temporal convexity (C) are given in mm; NI = B/C.

n, number of measured brains.

Hemispheric lateralisation is shown as anallocortical (B) preponderance in favor of the left hemisphere, in both ethnic groups. Further, the ratio L/R, a measure of lateralisation, is more pronounced in the African community (1, 20) than in the Europeans (1, 12). Finally, in the right hemisphere the Europeans show a significant increase in allocorticity (1, 39) compared to the Africans (1, 28). The following considerations are offered in support of the quantification method adopted.

(A) G. Elliot Smith, in his description of the Rhodesian skull and endocast (1928) called the ratio of width to the height of the temporal area "a singular deficiency in the temporal development as compared with that of the higher types of human brain", adding that the areas involved are those which "attain their full maturity latest in the process of development of the brain of the modern human child". This suggests that the ratio of the infratemporal base ("width") to the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

convexity ("height") of the temporal lobe is an index of progressing neocorticalisation from the Neanderthal to the sapiens brain.

(B) The sylvian angle which measures encephalic flexural trends has been described as "an infallible index of humanity of a particular brain" (Schepers, 1949). In agreement with Weidenreich, Schepers states that the forward and downward movement of the frontal pole and the forward growth of the temporal cerebral pole are the morphological concomitants of the changes at the sylvian angle (T. Edinger, 1975: 218). By taking into account a parameter involving the temporal area, the measurable decrease of the sylvian angle from the gorilla's suggests through the Australopithecoid to the modern brain the feasibility of quantification with regard to the progress achieved from anthropoid to modern man.

(C) H. Spatz' pioneering work (1937) and that of his followers (Lüers, 1947; Luers and Spatz, 1957; Jakob, 1979) on Pick's type of presenile dementia have provided evidence of the anthropogenetic character of the fronto-temporal (basal) cortices coinciding with the late-myelinized infra-temporal sector of Flechsig. Pick's disease starts with characteristic disturbances in the emotional sphere and in social contact to end up, after a protracted course, with loss of human character and personality. This goes hand in hand with a specific type of cortical atrophy involving the phylogenetically early regions, the sites of predilection being the avenues and pathways between olfactory and limbic (=palaeomammalian) areas (Jakob, 1979). They coincide with the "basolateral limbic circuit" of Livingston and Escobar (1971) and with Kaada's (1960) "cingulate, posterior orbital, anterior insular and temporal pole cortices". See fig. 1 and 2.

II. Phylogeny

> "I regard the differential growth of the brain in early hominids to be one of the most important anchorages about which a theory of human evolution will eventually be constructed".
>
> *Ralph L. Holloway* (1976)

Table 2 shows the NI parameters obtained from the two best-preserved prehominid endocranial casts, compared with those of modern man in the present series computed by the Centre for Advanced Computing

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and Decision Support, Pretoria (1989). The cranial capacities are taken from Tobias (1971).

Table 2[1]

		R(ight)	L(eft)*
Taung, Australopithecus gracilis cranial capacity 500 c.c. (only right half preserved)		1,90	–
H. Rhodesiensis (Kabwe, formerly Broken Hill) cranial capacity 1280 c.c. Late Middle Pleistocene (Acheuléen)		1,38	1,32
Modern Man cranial capacity 1370 c.c.		n	
Whites	50 $p < 0{,}01^{**}$	1,399	1,583
Blacks	53 $p < 0{,}01^{**}$	1,301	1,553

Comparison of the NI values in the two hemispheres obtained from endocranial cast measurements of two South African prehominids (Irsigler, 1984a) with those of modern man.

n, number of measured brains
(* "significant") (** "highly significant")

Discussion (Table 2)

(1) The decrease of the NI in the right hemisphere from the high value 1,90 in the Taung specimen to that of modern man (between 1,30 and 1,40) reflects the sudden expansion of the neocortex at the transition to the Neanderthal and modern grade. It is consonant with the shrinkage of the palaeocortex occurring from the lower mammals upwards (Gegenbaur, 1898; Spatz, 1955; Hassler and Stephan, 1966; Sanides, 1970). It is part of the "migratory processes" (Schepers, 1948) characterizing the early stages in phylogeny and ontogeny of the sapiens brain.

---

[1] My sincere thanks are due to Mr. Alun R. Hughes, chief technician in the Department of Anatomy, University of the Witwatersrand, Johannesburg, for permission to take the measurements and photographs. Subsequently, I discussed many aspects of the TAUNG specimen with professor P. V. Tobias.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

(2) The NI values in the right hemisphere of the Rhodesian endocast (1,38) corresponds to that in modern man. Rhodesian man lacks asymmetry in favor of the left hemisphere characteristic of modern man. NI quantification confirms what Smith described as a primitive feature in the Rhodesian endocast emphasizing "the exceptional symmetry for a human brain" (Smith, 1928; Irsigler, 1976 c).

(3) Most significant is the sharp increase of the left-hemispheric NI-value from the low 1,32 to that in modern man. It is complementary to what is said under (1). It suggests that the gain in allocortical prepotency in the left hemisphere of our brain is associated in some way with the latter's becoming the "dominant" one, that is, the speaking half. This indicates a relatively recent stage in brain evolution coinciding with Upper Middle Pleistocene and the end of Riss glaciation some 150 to 200.000 years before present (Chard, 1969; Klein, 1973).

(4) In Africa, the time of progressing drought from the early Pliocene to the Middle Pleistocene had seen a man unchanged with a brain not larger than the apes'. This was followed by an "explosive" phase of accelerated progress marked by the great Acheuléen hand-axe cultures (L. S. B. Leakey, 1961). The ecological upheaval was paralleled by a shift from foraging to persistence hunting, from the vegetarian mode to carnivorous killing (Krantz, 1968; Chard; 1969). The group spirit, implying discrimination between groups, favored team production and team (individual) selection (Keith). In terms of brain evolution, this coincided with making tools to a set and regular pattern dependent on measuring events in the context of time as well as space, a kind of "Copernican revolution", that is, categorizing events in terms of cause and effect.

The Geneva school of genetic epistemology has brought to light the ontogenetic equivalent: the (European) infant accomplishes the "Copernican revolution" in 12 to 18 months (Piaget, 1976; Inhelder, 1976).

III. Ontogeny – *(A) Infants*

In table 3 the NI parameters in the final sample of the present work are shown in the two ethnicities (103 adults, 25 infants aged three years or less).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Table 3

	n	R	L	p-value
White adults	50	1,399 (0,260)	1,583 (0,298)	p<0,01**
White infants	6	1,093 (0,154)	1,305 (0,155)	p<0,05*
Black adults	53	1,301 (0,205)	1,553 (0,305)	p<0,01**
Black infants	19	1,262 (0,221)	1,637 (0,381)	p<0,01**

Comparison of NI hemispheric lateralisation in 25 infants (of three years or less) with that in 103 adults in the two racial groups to show the difference in ontogenetic development of the brain between the European and the African community. This is the final sample size of the present work. Analysis of variance by the Centre for Advanced Computing and Decision Support, Pretoria (1989).

n, number of measured brains
standard deviation in brackets ( )
* means "significant"
** means "highly significant".

Discussion

It has been well known since the fifties (Hébert, 1977) that the African Negro baby, compared with the European of the same age, exhibits precocity regarding physical, psycho-motor, and socio-emotional development, including language acquisition. The Negro newborn shows psycho-motor activity equivalent to that of European babies of four to six weeks (Geber and Dean, 1957). In a later study (1964) Geber and Dean come to the conclusion that the Negro advance declines after two years of age when the white infants start to catch up and even surpass. Arthur R. Jensen (1973) lists 37 publications all of which, except three non-published, confirm the previous findings. He states that Negro infants, whether born in Africa or America, are physically and motorically more advanced than white infants, adding that there is a general negative correlation between rapidity of early

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

development and later level of cognitive ability.

Inferences drawn from Table 3:

(1) The European and African infantile NI parameters overlap, the European babies tending to the lower (right-hemispheric) values, the Negro infants to the higher (left-hemispheric) NIs. This indicates a difference at the infantile age, confirming a tendency for "left-brainness" in the African group, both infants and adults, as mentioned previously (in I.4).

(2) The Negro infants' NIs include those of their adult parents. In the Europeans, the two are mutually exclusive.

(3) There is a difference in the mean ages of infants between the two ethnicities. In our sampling, the black babies are on average seven weeks older than the white babies. This may well be a qualifying factor explaining the NI differences. However, it can hardly be maintained that the black infant could reach the level of cerebral integration in the Negro adult within seven weeks. It takes the European child much longer to catch up with the grown-ups. NI parametrization indicates that during adolescence, in the Whites there is a "shift" from lower to higher NI-values, i.e. in the direction of "left-brainness", whereas the Negro babies are born with the NIs of their parents.

(4) One-way covariant analysis shows a significant difference between the two groups for the right hemisphere, see Table 4.

Table 4

	n	t-statistic	p-value
Black adults vs. black infants	44 16	0,7832	0,4353
White adults vs. white infants	42 8	3,3298	0.0012*

One-way analysis of covariance (adults versus infants) for the grouping variable and covariate age indicates for the right hemisphere a significant (*) difference between the European and the Negro groups.

Adapted test level 0,05/12 = 0,0042. (Inst. for Biostatistics, 1984).

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Table 5

White		n	age	R	L	p
male	1983	30	49,6	1,364 (0,233)	1,513 (0,197)	0,0090**
	1989	39		1,402 (0,250)	1,540 (0,224)	0,0023**
female	1983	12	53,6	1,420 (0,315)	1,749 (0,442)	0,0275*
	1989	11		1,388 (0,309)	1,735 (0,468)	0,0168*
Black						
male	1983	37	33,9	1,303 (0,220)	1,548 (0,288)	0,000**
	1989	44		1,315 (0,216)	1,528 (0,289)	0,0000**
female	1983	7	35,0	1,263 (0,132)	1,726 (0,291)	0,0111*
	1989	9		1,234 (0,127)	1,676 (0,369)	0,0045**

Gender-related dimorphism revealed in morphogenetic (NI) parameters obtained from the two ethnic groups. The 1983 sample was analyzed by the Institute for Biostatistics, and "stocked up" by 1989 to 103 adult brains computed by the Centre for Advanced Computing and Decision Support.

n, number of measured brains.
standard deviation in ( ) mean ages in years.
p, p-values with * meaning $p < 0,05$; ** meaning $p < 0,01$

Summary

The group differences shown are not likely to be explained in terms of a morphofunctional effect of interaction between infant and adult (Ragier, 1985). These differences are morphogenetic in origin and character. They reflect spacetime correlations between phylogeny and ontogeny leading to different degrees and different rates of ecephaliza-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tion. They represent heterochronic "deflections" from the dynamic process called above "Jacobian morphism" (section I.3 b).

B. Gender-related Group Differences

Such differences in cerebral organization and behavior have been worked out in various fields of investigation (Hamburg, 1978). They concern, first, the rate of maturation ranging from fetal life to adolescence with the male entering puberty on average two years later than the female. Second, hemispheric differentiation revealing left-hemispheric superiority in girls for verbal identification; conversely, the minor hemisphere's special ability to extract a "holistic" map from parts was found inferior in the female compared to the male (Nebes, 1974). Finally, sexual dimorphism in terms of hemispheric organization is revealed in differences in vulnerability to seizure-producing insults and minimal brain damage during pregnancy, delivery and the neonatal period (Taylor; 1969 ; Michelsson, 1985). Gender-related group differences can well be expressed in terms of cerebral integration by means of the NI parameters. See Tables 5 and 6.

Interpreting Table 5;

(1) There is left-hemispheric dominance in both sexes and both ethnicities indicating allocortical preponderance in favor of the dominant hemisphere. This confirms the results given in Table 1 and Table 3.

(2) In the dominant hemisphere, the females show higher NI ratios, compared with the males, again in both races. The parameters are reversed for the minor hemisphere with one exception in the Whites of the 1983 sample; the small sample sizes in the females are to be noted.

(3) In both groups the female ranges include those of the males and exceed the latter by far in the range of the left-hemispheric allocorticity (higher NI values).

(4) Consequently, the right-left overlap in the females is much greater than that in the males. This supports the idea that the females enjoy a greater interhemispheric communication compared with the males, an inference in agreement with Witelson (1989) who measured and compared relevant parts of the corpus callosum in 35 females and 15 males.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Institute for Biostatistics was able to quantify, in the Caucasians, the sex-linked difference for the left-hemisphere (Table 6).

Table 6

	Male n = 30
Female n=12	t-statistics 2,2442
	p-value 0,0271*

Sex-linked allo-neocortical lateralisation of the left hemisphere in a sample of 42 Caucasians (Institute for Biostatistics, 1983).

n, number of measured brains
* significant for $p < 0,05$

Summary

Allo-neocortical parametrization applied to the limited sample sizes of the present work with regard to gender-related differences shows in the females a definite left-hemispheric (allocortical) prepotency in the European and African communities. It may explain the observed superiority of the female gender with regard to verbal expression and interhemispheric cooperation. More generally, the female brain's organization tends towards the phylogenetically early, hormonally motivated polarity which characterizes the allocortex conducive to socialization and preservation of the species (MacLean, 1952, 1970; Nieuwenhuys, 1985).

(C) The Minor Hemisphere

It has been called "the neglected hemisphere" because in modern (Western) societies "it gets the only barest minimum compared to the things that we do to train the left, or major, hemisphere" (Sperry, 1983: 56 ff). Yet, the minor hemisphere is found to be superior to the left in visuospatial and "gestaltist" (direct apprehension of shape) abilities as the observations show in subjects with their hemispheres separated by commissurotomy (Levy, Trevarthen and Sperry, 1972).

Hemispheric specialization is revealed by the present method of NI quantification as retarded allocorticity of the right hemisphere in the European adults of mean age 51 years. Table 7.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Table 7

1984	**n**	**R**	**L**	**p**
White	42	1,380	1,580	0,0008**
		(0,256)	(0,303)	
Black	44	1,297	1,576	0,0000**
		(0,208)	(0,292)	
1989				
White	50	1,399	1,583	0,000187***
		(0,260)	(0,298)	
Black	53	1,301	1,553	0,000001**
		(0,205)	(0,305)	

Hemispheric dissociation revealed in NI parameters in an intermediate (1984) and in the final stage (1989) of the present work. The 1984 sample was computed by the Institute for Biostatistics, the 1989 sample by the Centre for Advanced Computing and Decision Support.

n, number of measured brains
standard deviation in bracket ( )
p, p-values, ** "highly significant" at $p < 0,01$

Discussion

The rise in allocorticity from NI = 1,30 to 1,40 in the European right hemisphere has been found in all computations carried out for the present work (see the random sample of Table 1 and the 1983 sample of Table 5). It is a unique phenomenon characterizing the sapiens brain in our sampling and our method of computation.

The first thing to be taken into account is the difference in the mean ages of the two groups. The African community is on average 17 to 19 years younger than the European family (Table 5). Is age the determining factor?

A discriminant analysis by two methods was performed by the Institute for Biostatistics (1983) allowing to distinguish between the two groups by correcting for the difference in ages. It was found that the difference in age was the distinguishing factor between the two races. Thus, the phenomenon under discussion is not racial in origin but a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

morphogenetic characteristic of the developing brain, that is, a difference in ontogeny or, in modern terminology, an "epigenetic deflection" (Groves, 1989:59), adding a new phenotypic stage in the adult descendant. In short, it is a "heteromorph speciation," see section I.3. Its characteristics:

(1) sudden "jump-like" onset,

(2) high rates of differentiation in the "deflected" direction,

(3) it is stenotopic (patchy distribution) and demic, that is group-specific.

The morphogenetic nature of right-hemispheric superiority is demonstrated "par excellence" by no less an authority than Roger Sperry, Nobel laureate. He emphasizes (Sperry, p.56 that this superiority exhibits a pattern of inheritance from parent to off-spring that "effectively rules out environment, experience, or any known theory of child development or nurturance".

What is the meaning of emerging phenotype?

First, it means superseding the age-old linguistic determinism, from Aquinas to Chomsky, that is, the attempt to infer the structure of the world from analysis of the structure (grammar) of language. With this, science of the Middle Ages became purely verbal, a matter of definitions and inferences drawn from them (Rougier). In modern times, it is the idealized "Galilean Observer" (Edelman, 1989) who describes causal and temporal precedence as a priori or immanent property of an "objective" world in his analytical language, localizing objects and events in the spacetime frame of reference and their perception in certain privileged areas of the neocortex. This is the case in the dualist-interactionist hypothesis (Popper and Eccles, 1977); in the "initial brain" concept (Glezer et al., 1988), as well as in the "Neuronal Group Selection Theory" of consciousness (Edelman, 1989). The morphofunctional approach, discussed in the "Introduction", is an instance of what the mathematician and philosopher A.N. Whitehead (1925/1949:66) has called "the fallacy of misplaced concreteness".

Second, RIGHT-HEMISPHERIC ALLOCORTICITY means a group-specific observer seeking not the "essence", but the meaning of things observed, the "perceived meaning", that is, their "gestalt", not the cognitive, but the emotional part of the informational content (Stent, 1975; Irsigler, 1984a, 1986). In this kind of "mapping" the time parameter is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

superseded by the parameter of implication (Lestienne, 1973). More recently, the inductive, anticipatory attitude has come to the foreground as the privilege of the right hemisphere (Riedl, 1980), contrasting with left-hemispheric inferential deduction, based on ad hoc experience. In induction, the individual information and its specific value is the guiding and decisive element. Its role in evolution has been discussed in section I.3 under the heading "semantic information".

It is noteworthy, in this context, that the ability to recognize faces, essential in the development of group cohesion, is found lost or purely developed in subjects with damage to the right hemisphere (Hecaen, 1978; Levy, 1982).

It is obvious that group-specific perception and thinking implies a strong affective impulse with regard to socio-emotional contact. We are dealing here with Cattell's "emotional truth" defined as "the most appropriate emotional response in a given species in relation to a given environmental situation".

Conclusion

A new method of quantification, based on allo-neocortical interdigitation (quantitative cerebral morphogenesis), was developed in cooperation with two South African Centers of Statistics. It revealed group differences in a selected sample of 128 modern sapiens brains (European and African Negro).

The group differences are interpreted as distinct stages intervening in the heterochronic relationship between phylogeny and ontogeny, here called "Jacobian morphism". The known psychomotor precocity of the Negro infant is confirmed. The African community is found to show definite signs of left-hemispheric allocortical preponderance. There are gender-related differences in both races. In the right hemisphere of European adults a retarded, age-dependent rise in allocorticity is revealed and interpreted as group-specific heteromorph speciation due to "epigenetic deflection".

Acknowledgement

Dr. J. Wind, Institute of Human Genetics, Amsterdam, has been kind enough to read an early draft of this paper and made valuable suggestions regarding style and content.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

References

de Beer, G. R.
1930 Embryology and Evolution. Oxford University Press.
Braak, H.
1980 Architectonics of the Human Telencephalon. Springer, Berlin.
Brillouin, L.
1971 Science and Information Theory. Academic Press, New York.
Cattell, R. B.
1972 A New Morality From Science: Beyondism. Pergamon Press, New York.
Chard, Chester S.
1969 Man in Prehistory. McGraw Hill, New York.
Dawkins, R.
1982 The Extended Phenotype. Oxford University Press.
1986 The Blind Watchmaker. Longman Scientific & Technical, Burnt Mill, Harlow, England.
Diepen, R.
1962 Hypothalamus. Handbuch der mikroskopischen. Anatomie des Menschen. 4. Band. Springer, Berlin.
Edelman, G. M.
1989 The Remembered Present. Basic Books, New York.
Edinger, T.
1975 Paleoneurology 1801 - 1966. Springer, Berlin.
Eigen, M.
1971 Selforganization of Matter and the Evolution of Biological Macromolecules. Die Naturwissenschaften 58:465-523.
Flechsig, P.
1920 Anatomie des menschlichen Gehirns und Rückenmarks auf myeloge netischer Grundlage, vol. 1, Thieme, Leipzig.
Garstang, W.
1928 The morphology of the Tunicata, and its bearings on the phylogeny of the Chordata. *Quart. J. Microscop. Sci.* 72:51-187.
Gegenbaur, C.
1898 Vergleichende Anatomie der Wirbeltiere.l. Band. Engelman, Leipzig.
Geber, M. et Dean, R.-F.-A.
1964 Le développement psycho-moteur et somatique des jeunes enfants africans en Ouganda. Courrier de l'Unesco 15:425-437
1966 Precocious development in newborn african infants. In: Readings in infancy and childhood (Y. Brackbill at G. G. Thompson, eds). Free Press, New York.
Geschwind, N. and W. Levitsky
1968 Human Brain: Left-Right Asymmetries in Temporal Speech Region.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Science 161:186-187.

Glezer, I. I. M. S. Jacobs and P. J. Morgane
1988 Implications of the "initial brain" concept for brain evolution in Cetacea. *Behavioral and Brain Sciences* 11:75-89.

Gould, S. J.
1977 Ontogeny and Phylogeny. Harvard University Press, Cambridge, MA.

Groves, C. P.
1989 Theory of Human and Primate Evolution. Clarendon Press, Oxford.

Hamburg, B. A.
1978 The Biosocial Bases of Sex Difference. In: Human Evolution, Washburn, S. L. and E. R. McCown (eds):155-213. The Benjamin/Cummings Publishing Company, Menlo Park, California.

Hassler, R. and H. Stephan
1966 Phylogenesis and Ontogenesis of the Forebrain. Thieme, Stuttgart.

Hébert, J.-P.
1977 Race et Intelligence. Copernic, Paris.

Hécaen, H.
1978 La Dominance Cérébrale: Une Anthologie. Mouton, Paris.

Holloway, R. L.
1976 Some Speculation Regarding Hominid Brain Evolution. IXe Congrès, Union Internationale des Sciences Préhistoriques et Protohistoriques Nice (France), *Colloque* VI:109.

Inhelder, B.
1976 The Sensorimotor Origins of Knowledge. In: Piaget and His School, B. Inhelder and H. H. Chipman (eds): 150-165. Springer, Berlin.

Irsigler, F. J.
1975 The Gene's Place in Evolutionary Adaptation. *The Mankind Quarterly* 15:255-280
1976a On A Priori Genetic Information. *The Mankind Quarterly* 16:219-226.
1976b Rhodesian Man and the Evolution of the Hominid Brain. *The Mankind Quarterly 17:83-112.*
1976c Paleoneurological Interpretations of the Endocranial Casts of Some of the Prehominids of Southern Africa. IXe Congrès Union Internationale des Sciences Préhistoriques et Protohistoriques, Nice (France), Résumés des Communications II:143.
1979a Cause and Effect in the Evolution of the Hominid Brain. *The Mankind Quarterly* 19:181-192
1979b Ecosystem and Genetic System. *The Mankind Quarterly* 20:5-10.
1983 The Role of the Temporal Lobe in Morphogenesis and Laterality of the Human Brain. *Speculations in Science and Technology* 6:445-453
1984a Quantitative Morphogenesis and Lateralisation of the Human Brain. *The Mankind Quarterly* 25:3-46.
1984b Die Bedeutung des Schläfenlappens für die Morphogenese und die

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Lateralisation des Gehirns. *Zbl. Allg. Pathol. Anat.* 129:263-264.
1986 The Island of Reil and the Roots of Language. *The Mankind Quarterly* 27:131-159.
1988a Morphogenetic versus morphofunctional theory. *Behavioral and Brain Sciences* 11:95.
1988b Interprétations Paléo-neurologiques de la conscience et du Langauge. *Anthropologie* 26:99-101.
1989 Language origin and the Island of Reil. In: Studies in Language Origins. Wind, J, Pulleyblank, E. G., de Grolier, E., Bichakjisn, B. H. (eds). John Benjamin Publishing Co., Amsterdam/Philadelphia: 233-256.
1990 L'Enracinement allo-néocortical du Langage. *Anthropologie* 28: 1-11.
1991 A Morphogenetic Quantitative Approach to Speciestypical Behaviour. *J. Hirnforsch.* 32/2:211-224.

Jacob, F.
1970 La logique du vivant. Gallimard, Paris.

Jakob, H.
1979 Die Picksche Krankheit. Springer, Berlin.

Jensen, A. R.
1973 Educability and Group Differences. Methuen & Co, London.

Kaada, B.
1960 Cingulate, posterior orbital, anterior insular and temporalpole cortex. In: Neurophyiology, J. Field, Magoun, H. W. Victor, E. H. (eds). Handbook of Physiology, vol II:1345-1372.

Kahle, W.
1969 Die Entwicklung der menschlichen Grosshirnhemisphäre. Springer Berlin.

Keith, A.
1968 A New Theory of Evolution. Gloucester, Mass.

Klein, R.
1973 Geological Antiquity of the Rhodesian Man. *Nature* 244:311-312.

Krantz, G. S.
1968 Brain size and hunting ability in earliest man. *Curr. Anthrop.* 9:450-451.

Laborit, H.
1974 Des bêtes et des hommes. *Agressologie* 15,2:93-107.

Leakey, L. S. B.
1961 The Progress and Evolution of Man in Africa. Oxford University Press.

Lenneberg, E. H
1967 Biological Foundations of Language. Wiley, New York.

Lestienne, R.
1973 Faut-il reformuler la physique? *Scientia* 108:69-101.

Levy, J. C. Trevarthen and R. W. Sperry
1972 Preception of bilateral chimeric figures following hemispheric deconnection. *Brain* 95:61-78.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Levy, J.
1982 Mental Processes in the Nonverbal Hemisphere. In: Animal Mind-Human Mind, D. R. Griffin (ed) :57-74. Springer, Berlin.
Livingston and A. Escobar.
1971 Anatomical Basis of the Limbic System Concept. *Arch. Neurol.* 24:17-21.
Lovtrup, S.
1974 Epigenetics: a treatise on theoretical biology. Wiley, Chichester, Sussex.
Lüers, Th.
1947 Über den Verfall derSprache bei der Pickschen Krankheit (Umschriebene Atrophie der Grosshirnrinde). *Arch. Pscyhiatr. Nervenkr.* 179:94-131.
Lüers, Th. and H. Spatz
1957 Picksche Krankheit. In: Handbuch der speziellen pathologischen Anatomie und Histologie. Nervensystem, W. Scholz (ed), XIII/1A:614-715.
Luria, A. R.
1980 Higher Cortical Functions in Man. Second Edition. Basic Books, NY.

MacLean, P. D.
1952 Some psychiatric implications of physiological studies on frontotemporal portion of limbic system (visceral brain). *Electroencephal. Clin. Neurophysiol.* 4:407-418.
1970 The Triune Brain, Emotion, and Scientific Bias. In: The Neurosciences, F. O. Schmitt (ed), 2nd study program: 336-349.
1978 The evolution of Three Mentalities. In: Human Evolution. Washburn, S. L. and E. R. McCown (eds). The Benjamin/Cummings Publishing Company, Menlo Park: 33-57.
de Mahieu, J.
1972 Le problème de l'hérédité des caractères acquis. (Unpublished monograph).
Michelsson, K.
1985 Recognition of MBD (Min. Brain Damage). *Essentialia* (ucb) 14/1:1-14.
Monod, J.
1972 Le hasard et la nécessité. Seuil, Paris 1972 Chance and Necessity. Collins, London.
Nebes, R. D.
1974 Hemispheric specialization in commisusrotomized man. *Psychol. Bull.* 81:1-14.
Nieuwenhuys, R.
1985 The Chemoarchitecture of the Brain. Springer, Berlin.
Northcutt, R. G.
1967 Architectonic Studies of the telencephalon of Iguana iguana. *J. Comp. Neurol.* 130:109-147.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Piaget, J.
1976 Piaget and His School (B. Inhelder, H. H. Chapman, eds). The Affective Unconscious and Cognitive Unconscious: 63-69. Piaget's Theory, *ibid.*: 11-23.
Popper, K. H. and J. C. Eccles
1977 The Self and Its Brain. Springer International, Berlin.
Prigogine, I.
1977 Time, Structure and Fluctuations. Nobel Lecture in Chemistry
Ragir, S.
1985 Retarded Development: The Evolutionary Mechanism Underlying the Emergence of the Human Capacity for Language. *The Journal of Mind and Behavior* 6/4:451-468.
Rensch, B.
1971 Biophilosophy. Columbia University Press, New York.
Riedl, R.
1980 Biologie der Erkenntnis. Paul Parey, Berlin.
Rougier, L.
1960 La Métaphysique et le langage. Flammarion, Paris.
Sanides, F.
1970 Evolutionary Aspect of the primate Neocortex. Proc. 3rd Int. Congr. Primat., Zurich, I:92-98
1975 Comparative Neurology of Temporal Lobe in Primates including Man with Reference to Speech. *Brain and Language* 2: 396-419.
Schepers, G. W. H.
1948 Evolution of the Forebrain. The Fundamental Anatomy of the Telencephalon. Maskew Miller, Cape Town.
Schepers, G. W. H.
1949 The Cerebral Sylvian Angle in the Australopithecidae. *South African Journal of Science* 46:118-123.
Sewertzoff, A. N.
1931 Morphologische Gesetzmässigkeiten der Evolution. Fischer, Jena
Smith, G. E.
1928 Endocranial Cast Obtained from the Rhodesian Man and Associated Remains. W. P. Pycraft (ed): 52-58. Brit. Mus. (Natural History), London.
Spatz, H.
1937 Über die Bedeutung der basalen Rind auf Grund von Beobachtungen bei Pickscher Krankheit und bei gedeckten Hirnverletzungen. *Zeitschrift fur gesamte Neurologie und Psychiatrie* 158:208-232.
1955 Die Evolution des Menschenhirns und ihre Bedeutung fur die Sonderstellung des Menschen. *Nachr. Giessener Hochschulges.* 24:52-74.
Spemann, H.
1936 Experimentelle Beitrage zu einer Theorie der Entwicklung (Silliman

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Lectures at the Yale University, September, 1933). Springer, Berlin.
Sperry, R.
1983 Science and Moral Priority. Blackwell, Oxford.
Stent, G.
1975 Limits to the Scientific Understanding of Man. *Science* 187:1052-1057.
Stephan, H.
1975 Allocortex. In: Handbuch der mikrorskopischen Anatomie des Menschen. W. Bergmann (ed). IV/9:1-988.
Taylor, D. C.
1969 Differential rates of cerebral maturation between sexes and between hemispheres. *The Lancet*, July 19:140-142.
Tobias, P. V.
1971 The brain in hominid evolution. Columbia University Press, New York.
1985 Punctuational and Phyletic Evolution in the Hominids. In: Species and Speciation, E. S. Vrba (ed) Transvaal Museum Monograph No. 4:131-141, Pretoria.
Vogt, C. and O.
1919 Allgemeiner Ergebnisse unserer Hirnforschung. *J. Psychol. Neurol.* 25:279-461.
Whitehead, A. N.
1949 Wissenschaft und moderne Welt. Morgarten Verlag Conzett & Huber, Zurich.
Willis, J. C.
1940 The Course of Evolution. Cambridge University Press.
Witelson, S. F.
1989 Hand and Sex Differences in the Isthmus and Genu of the Human Corpus Callosum. *Brain* 112:799-835.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

How Relevant is the Nature/Nurture Controversy to the Need for Eugenics?

William J. Andrews
Silver Spring, Maryland

While there are other significant problems related to the future of this country that need serious attention, all of which must be resolved if our civilization is to survive, this paper discusses the need to react to the possibility of a dysgenic threat due to an intergenerational decline in human intelligence. This is a problem that is seldom publicly discussed or debated, and therefore most people do not have an adequate background upon which to base intelligent conclusions. It has been especially clouded by the hairsplitting academic debate concerning the exact degree to which intelligence is dependent on heredity.

The subject of this paper was suggested by a reading of a debate between Eysenck and Kamin[1] relating to the nature/nurture controversy. In this controversy, Kamin holds that environmental factors are dominant in determining a person's IQ, and that any hereditary contribution to IQ is negligible and that genetics therefore is irrelevant to any explanation of acknowledged group disparities in academic or professional success. Eysenck, speaking for the hereditarians, by contrast, argues that although environment plays a role in determining IQ, genetic factors are also important. Hereditarians believe that the threat to the level of IQ in the West is sufficiently real that solutions should be sought in *both* areas, at least until it has been conclusively determined that remedial intervention is not required.

In reading the referenced work it became apparent that a lay reader could make no serious assessment of the subject without studying the original references cited in that work as well as the many studies which have been carried out since then – a task of several

[1] Eysenck H. J. and Kamin, Leon, *The Intelligence Controversy*, 1981, John Wiley and Sons, New York and Toronto.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

months. Even then a lay reader might conclude that the task was beyond his capabilities as the level of statistical competence required is challenging. The debate focuses on the relative apportionment of IQ to heredity and environment. In what follows, an argument will be made that the need to adopt anti-dysgenic measures is not directly related to the outcome of that debate, but that pragmatically and ethically it depends on the extent to which we are prepared to ignore the threat and simply pass the problem on to our progeny, instead of accepting responsibility for our share of the required effort.

For a lay person interested in this subject, two sources of information are recommended. One is Arthur Jensen's *Bias in Mental Testing*[2] and the other is a review of that book published in *Behavior and Brain Sciences*.[3] Jensen's work is complete and thorough. For those seeking less challenging reading, however, the review article cited above will be appreciated. It includes not only a precis of Jensen's book, but also eight pages of peer review and commentary, followed by the author's response. This review thus presents a balanced overview of the entire issue.

As previously mentioned, the core of the Eysenck-Kamin debate is the extent to which a person's IQ depends on heredity and how much upon environment. There are two basic problems posed by the distribution of IQ. One of these is a drift in the average IQ in the downward direction, which makes a nation less competitive in world markets, lowers the standard of living, exposes more workers to obsolescence (due in part to increasing intellectual requirements caused by advances in technology), and makes a democratic government less viable. A second and equally obdurate problem is that significant differences in intellectual competence have been found to exist between groups, and this causes inevitable friction and hard feelings. The crucial parameter about which the debate rages is the degree to which intelligence is genetically determined.

It is the purpose of this article to demonstrate that, from the point of view of dysgenics, the importance of the debate as to the exact

---

[2] Jensen, Arthur R., *Bias in Mental Testing*, 1980, New York Free Press.

[3] Precis and review of *Bias in Mental Testing*, *Behavior and Brain Sciences*, Vol. 3, Sept. 1980, Precis pp 325-333, commentary pp 333-359, author's response pp 359-371.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

heritability of IQ is overblown and concerns largely technical issues, and that the ethical side of the question issue is *not* dependent upon the outcome of the environment-heredity debate – even though this is now widely accepted as being in the ratio of 30 to 70 (i.e. the heritability of IQ is believed to be in the region of 70%). The issue is an ethical one, and if people in general had a better understanding of the underlying ethical issues, it might be easier for us to develop the consensus badly needed for finding and implementing solutions.

Figure 1 illustrates in simplified format how both evolution and eugenics operate to make changes in our genetic heritage. This figure shows two curves, one labeled "original," the other "derived." The curve marked "original" illustrates the distribution of a parent population, assuming no crossbreeding, as a function of IQ or intelligence quotient. The number of persons with IQs falling between any two adjacent IQ points along the horizontal scale would be represented by the height of the curve at the center of that interval. The total number of persons in the population is proportional to the area under the curve, and can be found given the scale factors for the horizontal and vertical axes. For convenience of discussion this is centered about an assumed mean IQ of 100, and has a distribution characterized by a typical breadth as defined by a standard deviation of 15 IQ points, or more universally understandable, by half of the distance between the half-amplitude points of plus/minus 17.66 IQ points as shown. For the purpose at hand, the vertical scale is normalized to one for the peak of the distribution as a matter of convenience, as the amplitude is not significant in the development.

Drawn through the peak of this distribution is a sloping (dashed) straight line, which represents the number of children the parents have, on an average, with respect to the replacement birth rate. For instance, from Figure 1 at an IQ of 85, one standard deviation from the average of 100, the number of children exceeds the replacement rate by a factor of 30%, and at an IQ of 115 the number falls short by 30%. These values are illustrative only, and the value of the slope, 0.3, is chosen to make the figure less cluttered. As implied above, the slope is expressed as a fractional value per standard deviation in IQ.

In our society, conditions are such that almost all will survive to maturity. Assuming for the moment that the children of the parents will have the same average IQ as the average of their parents, a curve

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

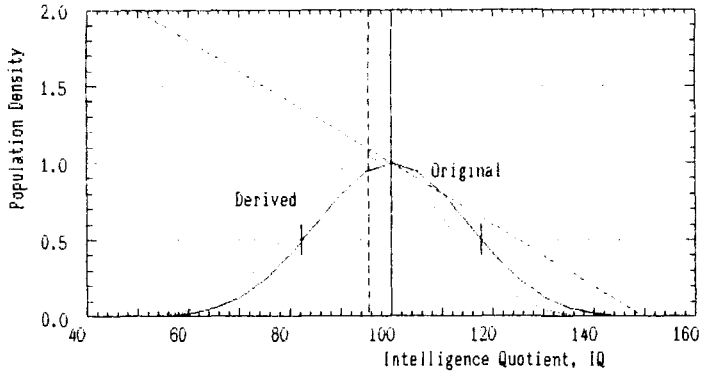

Figure 1. Figure illustrating dysgenics and eugenics mechanism.

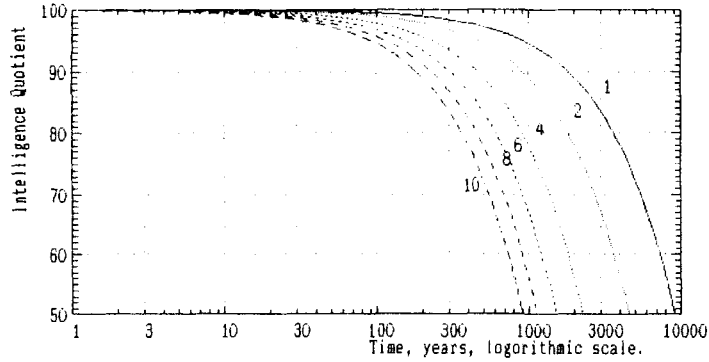

Figure 2. Time impact of value of heritability.
(Heritability shown in tenths.)

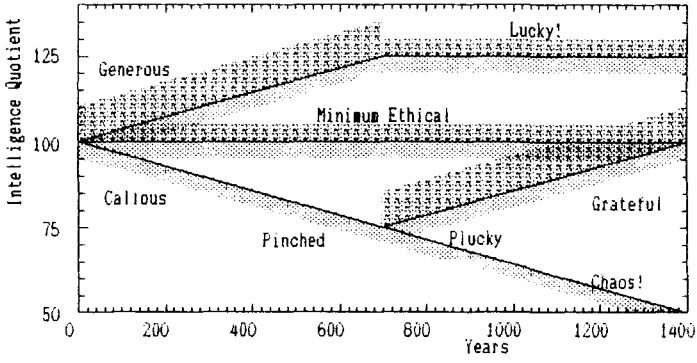

Figure 3. Schematic illustration of several scenarios.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

similar to the "original" can be derived by the multiplication of the "original" distribution by the birth-rate slope, and the resulting distribution is labeled "derived." One can see that the peak and average of the "derived" curve has been shifted in the left direction to a new average value as shown. One effect not accounted for, which in a quantitative analysis would need to be included, is the effect of assortive mating. There is a relatively high level of correlation between parent's IQs, often estimated at 45%. This effect, as well as environment would need to be included explicitly before one could give quantitative significance to the figures.

Clearly this is a very simplified presentation, as in general the curve giving the ratio of the actual number of children to the replacement rate will not be a straight line function of IQ, and the equivalent slope for a real relationship may be steeper, shallower, or of the opposite sign. None of these considerations, however, are significant for the purposes at hand. It is not intended here to assume that this new average so found represents a new value for the average population IQ. In fact, it is almost certainly not that large. Most children's IQs are located between the parent's IQs and the mean of the population. Taking this fact into consideration, the actual new "derived" average change will be some multiple (less than one) times that shown in our example. For the simplified model used here, the fraction that determines how much of the child average IQ change shown one actually gets is the same number which, when multiplied by the parent's IQ referenced to the group mean, gives the average of the children's IQs. This parameter is the "heritability" as defined for purposes of exposition in this very simple model. A more complete analysis would give a more complex but similar result.

Very crudely, this is the process by which evolution made changes to adapt man in his struggle for existence. Those unable to feed and care for their children, either collectively or individually, would have fewer surviving children. Those more capable of producing and raising children until they in turn can reproduce would have more descendants, tilting the curve to the right, indicating an increase in the successful traits. Intelligence is only one of the almost innumerable survival-oriented traits that have been similarly reinforced. In a Malthusian world, where the population is controlled by available resources and birth control measures are not available, life is competi-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tive. In modern societies in which standards of living and social support are such that effectively all individuals survive to maturity, nature's adaption mechanism now uses a new criterion – simply the number of births per mother irrespective of other parental characteristics. If there is a negative slope due the correlation of IQ with birth rate, the average IQ of a population will decline. The significant criteria here are two things, the equivalent slope of the birth-rate/IQ curve and the heritability. At least superficially, it would appear that the heritability is a very significant parameter.

Figure 2 shows the average IQ drop decline due to the above mechanism, as illustrated in Figure 1, for six values of heritability. Figure 2 uses a raw drift rate, before allowance for heritability, of 1.5 IQ points per generation. There is very little data on this subject, but the value of 1.5 is consistent with a value from Vining[4] of approximately 1 IQ point per generation, which is equivalent to the assumed 1.5 above with a heritability of 0.667. A generation is taken as 28 years, although this is different for different societies and is not constant in time in any case. The heritability assumed for the plot falls comfortably in the range of 0.4 to 0.8 which bounds most estimates. Once again, the exact value selected here is not crucial to the argument. The downward drift is proportional to the product of the amount of crude unbalance before taking into account heritability, the heritability, and time. If one assumes constancy of the values, the average IQ curves drop a constant amount each generation.

It is clear from the curves shown in Figure 2 that the serious problem is not so much in the near term as in the future, and for some assumptions, in the distant future. For one who has no concern for the future the question is moot. Current dysgenic affects are not important to those who are only concerned with the present. On the other hand, for someone who feels concern for those yet to be born, the question is clearly not moot. At almost any value of heritability, the problem is serious.

Most of us will accept that we have a minimum obligation to leave

---

[4] Vining, Daniel R., "Fertility Differentials and the status of nations: A speculative essay on Japan and the West", in *Intelligence and National Achievement*, Cattell, Raymond B., Ed., Cliveden Press.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the world in no worse condition than we found it. Given that assumption, one might ask what the genetic burden will be, remembering that the degree of heritability is the multiplier for any eugenic program, just as it is for the dysgenic effects of the adverse birth-rate imbalance. In order to have no degradation in population average IQ, the curve corresponding to the "derived" curve of Figure 2 must average 100 or greater. The short-term seriousness of the slippage, if any, of course, would be ameliorated by low values of heritability. However, under those circumstances, even though the IQ drop is not large, the amount of eugenic effort to bring it back will correspond to the raw dysgenic trend rather than to the drop in IQ. If a dysgenic trend is allowed to proceed unchecked, it accumulates in time. Any postponement of necessary eugenic activities means that posterity will have the onerous chore of remedying our neglect – something it will by definition be less well-equipped to do.

Figure 3 has been prepared to illustrate this issue. For illustrative purposes the value of the downward drift rate is taken to be 1 IQ point per generation of an assumed 28 years. Starting at the left at a presumed average IQ of 100, three options are illustrated. The lowest path illustrates the "do nothing" option. The shadings below the solid lines indicate the presence of dysgenic pressures that cause a constant drop in average IQ. The shadings above, not present in this instance, indicate eugenic efforts. Sometimes the effort above the line is shown with twice the amplitude of the dysgenic pressures. This indicates that adequate eugenic effort must be expended to overcome the existing dysgenic trend before one can effect any positive compensatory changes. This lower curve, followed to its logical conclusion, results in social chaos.

The response of a group or society to such a drift depends upon the population for which that society has (not claims) ethical concern. If the reference population consists of adults over seventy who happen to have no ethical concern for their children or progeny, certainly the subject is moot. With an expected life of a fraction of a generation and no concern for others, even under the worse circumstances they would have no reason to act. Suppose, however, that the population of ethical concern included all those now living and to be born before 3000 AD. Now one has a vastly different situation and projected consequences for a thousand years into the future are significant.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

To take a pragmatic case, predictions from known imbalances in the birth rate of different social classes suggest that the imbalance is now on the order of 1 to 2 IQ points per generation, before allowing for the heritability rh. Taking a generation at about 25 years or four generations in a century, this would give an approximate six IQ point decline in 100 years for an rh of one, which value is almost certain to be incorrect. If it were 0.5 then the six-IQ point would be reached in 200 years. In 1000 years, it would be five times that or 30 points. With today's requirements on intellectual tasks due to our complex technological society, and not the slightest hint that things will get simpler in the future, that should count as a disaster within the context of that person's value judgement.

The value of heritability, therefore, is important because it defines the level of short-sighted selfishness at which the problem of declining intelligence can be ignored. Anyone who has no concern for the future, then, can even ignore the postulated problem if the heritability were one (100%). On the other hand, one might make a basic assumption, not unreasonable, that at a minimum we should not bring children into the world and pass to them an inheritance inferior to that which our generation recieved – notably, one with an inferior gene pool. That is, we are in no mood to participate in eugenic or other highly "dubious" endeavors unless it is forced upon us by logic. Not letting things get worse we will accept, but progress we will leave to the future. Making such an assumption completely bypasses the question of the value of rh. If rh is high, then a eugenics program is very efficient, but on the other hand the dysgenic stress is also powerful due to the high heritability. Thus the appearance of the heritability in both the requirement side and the eugenics side means that it is irrelevant under the "hold our own" assumption.

If rh is very low, then society's average IQ is a valuable resource, valuable because it is durable, and also because the cost in obtrusive eugenics programs is very high if one wishes to raise the level of IQ for future generations. While a policy of maintaining the status quo sounds like an acceptable objective, there is another objective which couples into the problem in a very significant way. That is the case where one wishes to remove significant differences in intellectual competence between groups as a matter of equity and compassion. Graceful

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

acceptance of such differences is scarcely possible. Even for a very obtrusive program, the period of time is long under almost any assumption, and is on the order of 100 to 150 years, depending upon what one means by "getting there." If the value of rh were very low, it might be very difficult to get anything started, given that the short-term payoff would pragmatically be small. On the other hand, any such a gain made would last for quite a while, even if the country allowed itself to slip into a situation where some dysgenic trends were tolerated. And one should be careful not to overlook intangible gains due to the self-respect one generates when one tackles a tough and difficult problem and passes a very significant benefit to one's children.

Therefore, for the midrange of values of rh, the only rationale for the failure to respond to a downward drift in IQ applies if we wish to, as it were, sponge on future generations. While extremely low values of heritability provide an attractive rationalization for doing nothing and passing the problem on to our children, such rationalizations are scarcely consistent with an ethical system.

Which is to say that the degree of heritability of intelligence, as debated in the nature/nurture controversy – while significant from the standpoint that the more we know and understand, the more effective we can be – does not affect the ethical obligation to recognize the need for some kind of eugenic policy. The threat of dysgenic trends surely exists in our modern world, but what the debate about the precise degree of heritability is about is whether the impact is fast or slow, that is, whether we can excuse ourselves from action and pass the problem to our children by rationalizing excuses for inaction. Viewed in that context, there is no reason why we should delay consideration of eugenic measures just because some scientists still question the *exact* degree of heritability, or argue that it might vary slightly from race to race. Those who argue for a low value of rh are opting to pass the problem to our children. Those who perceive a high value of rh are trying to point out that dysgenic trends may not only be real but that the issue is an urgent one. To do our moral duty we should investigate the threat of dysgenic trends and attempt to take some kind of action – if nothing more than alerting the public to the situation.

As long as rh falls within a reasonable range, and is not zero, he who claims the high moral ground should at the very least argue for a very significant effort to clear the air with a "we did this, and this is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

what happened" type of research program[5-6] the results of which the electorate can understand and accept, in contrast to arcane arguments which only specialists can follow.

In sum, the academic battles that rage over the selection or prediction of heritability are much overblown and of less significance that they are made out to be. Many are arguing without any real understanding of the implications of the debate, which essentially revolve around practical issues concerning the need (or otherwise) to implement some form of eugenic policy. If this generation is ethically concerned about its responsibility to future generations, it should perhaps design a pragmatic test to determine the efficacy of a voluntary eugenics program – one that would be acceptable to both sides, the results of which could be clearly demonstrated to the public at large. As I hope to have shown above, the exact extent to which genetic factors determine intelligence is not a criterion for the acceptance or denial of the need for a eugenic program. Since none today deny that genetics plays some role in determining intelligence, the need to consider the evidence for dysgenic trends cannot ethically be avoided. A close relationship between heredity and intelligence makes eugenic considerations all the more pressing, but dysgenic trends are quite as fatal whether they take place slowly over a long period of time or rapidly. If we are concerned for the future of the (hopefully) millions of generations still to be born, we must realize that their fate lies to a considerable extent in the breeding practices of those who are currently alive.

---

[5] Andrews, W. J., "Eugenics Revisited," *Mankind Quarterly*, Vol. XXX, No. 3, Cliveden Press, 1990, pp. 235-302.

[6] Andrews, W. J., "Addendum to 'Eugenics Revisited,'" *Mankind Quarterly*, Vol. XXXI, No. 3, 1991, pp. 305-316.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Intelligence and National Achievement

Editor
Raymond B. Cattell

CONTENTS INCLUDE

INTRODUCTION: THE CONTEMPORARY AWAKENING
Raymond B. Cattell

THE ROLE OF PSYCHOLOGICAL TESTING
Raymond B. Cattell

TEST SCORES AS MEASURES OF HUMAN CAPITAL
Barbara Lerner

FERTILITY DIFFERENTIALS AND THE STATUS OF NATIONS:
A SPECULATIVE ESSAY ON JAPAN AND THE WEST
Daniel R. Vining, Jr.

POPULATION INTELLIGENCE AND NATIONAL SYNTALITY
Raymond B. Cattell and Jerry M. Brennan

APPENDIX: SOME CHANGES IN SOCIAL LIFE IN A COMMUNITY
WITH A FALLING INTELLIGENCE QUOTIENT
Raymond B. Cattell

ISBN 0-941694-14-3
Hardback, 176 pages
$40.00

Cliveden Press
6861 Elm Street, Suite 4H
McLean, Virginia 22101

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Race, Intelligence and Bias in Academe

By Roger Pearson
Introduction by Hans J. Eysenck:
"Science and Racism"

Chapter 1: How it All Began
From Sir Francis Galton and Karl Pearson to the decline of the British and American hereditarian thought with World War II

Chapter 2: The Legacy of Marx, Mannheim and Lysenko
Conway Zirkle reveals the extent of Marxian influence in the social sciences with particular reference to extreme environmentalism

Chapter 3: Scientific Luddites and Neo-Lysenkoists
Bernard Davis of Harvard Medical School exposes the extent of neo-Lysenkoist infiltration of Western social science.

Chapter 4: Arthur Jensen
The link between heredity and intelligence is summarized, and a comprehensive account is given of the persecution to which this Berkeley scholar was subjected

Chapter 5: William Shockley
A renowned Nobel Laureate, the co-inventor of the transistor, is calumnified for seeking to alert America to the threat of declining intelligence

Chapter 6: J. Philippe Rushton
A Canadian Guggenheim Fellow is harassed by the media and by academic activists – and even investigated by the Canadian police – when he presents a paper to the AAAS.

Chapter 7: Activist Lysenkoism
Academic Leftists argue that genetic studies are pro-Capitalist. This is a case study of one such series of attacks on some of America's most responsible scholars

Chapter 8: Other Prominent Scholar-Victims
The experiences of other persecuted "hereditarian" scholars such as E.O. Wilson, Richard J. Herrnstein, Michael Levin and Linda Gottfredson are documented

Chapter 9: Academia, The Media and Public Policy
Scholars Snyderman and Rothman conduct a study which reveals media bias in reporting scientific research into IQ, heredity and race

Chapter 10: Conclusion
The substantial contribution of heredity to IQ is confirmed by the findings of the Minnesota Twin and Adoption Research Project

I've read it from cover to cover and found it to be a "good read" ... thoroughness and accuracy of its factual coverage ... It documents an aspect of the "IQ controversy" that has never before been adequately reported ... a great service to the field" Arthur R. Jensen

Price $28.00 – 304 Pages – Paperback – ISBN 1-878465-02-3

Scott-Townsend Publishers
P.O. Box 34070, N.W. Washington, D.C. 20043

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED